The Builder.

SATURDAY, JULY 2, 1853.

OF course, all our London readers know HAMPSTEAD HEATH, with its open wilderness and splendid views, now as it was in the days of Fitz-Stephen, except that the wild boar and wild bull no longer haunt the forests. Here the bees—

> "Murmur by the hour in foxglove bells,"

and the furze brightens the ground, and inspires notions of an untrammelled freedom, exhilirating in the extreme to the mind of the tired worker, denizen of a pent-up town. It is one of the loveliest spots in the kingdom; and we would aid those who are seeking to keep it in its present state for the health and delight of the people:—

> "Cold must he be who ever gazed
> Impassive on its beauty."

The effect of parks and pleasure-grounds on the health, the manners, and the happiness of a great metropolis, has been wisely felt and distinctly recorded from the earliest times; in proof of which we may cite the Hanging-gardens of Babylon, those of Cæsar at Rome, the Tuileries of Louis XIV. and, later, our own Hyde-park, St. James's and the Regent's parks. Our own manufacturing cities,—Manchester, Liverpool, Birmingham, and Preston, are all acting at length upon this conviction, as due and essential to their population of unrefined but most meritorious mechanics.

We gratefully recognise our obligation to George IV. and his guide and coadjutor, the late Mr. Nash, for the liberal arrangements which have added the last ornament to our great city, in the Regent's-park and its approaches, extending from the Houses of Parliament to the New-road.

Though the inhabitants of the metropolis have since increased nearly a million, no proportionate increase has been provided for their health and recreation. The projects of the present day appear to us unworthy of the noble examples bequeathed to us by our ancestors. The last—that of Battersea "Marsh," in contra-distinction to Battersea-rise, which has cost 200,000*l.* and will, it is said, cost at least 200,000*l.* more to accomplish the design of bringing it, by means of a new bridge, within reach of the bulk of the population—is perhaps the least propitious. First, because it is obvious that in a flat, no horizon or distance can be enjoyed, if but a bush intervene: a flat is a proper site for a labyrinth, where in a small space a mystery of extent may be contrived by art, as in Vauxhall Gardens or the Park of Brussels, and ten acres will as well effect this as a hundred; while heights and undulation enable us to appreciate extent, to vary and beautify landscape, and, above all, to command the surrounding scenery by the birds'-eye view. Secondly, because a bridge such as is here required has been, and ever will be, found a real barrier to easy and agreeable communication: it constitutes in effect a territorial boundary, with all its antipathies, marking castes as distinct as the Romans and Transteverénes, the Quartier Chaussé D'Antin and La Cité de Paris, the Houses of Parliament and Lambeth.

Victoria Park, and even Highbury and Finsbury, situated as they are in populous districts, are better, but these are scarcely 50 feet above the Thames, and consequently lack the advantages derivable from height.

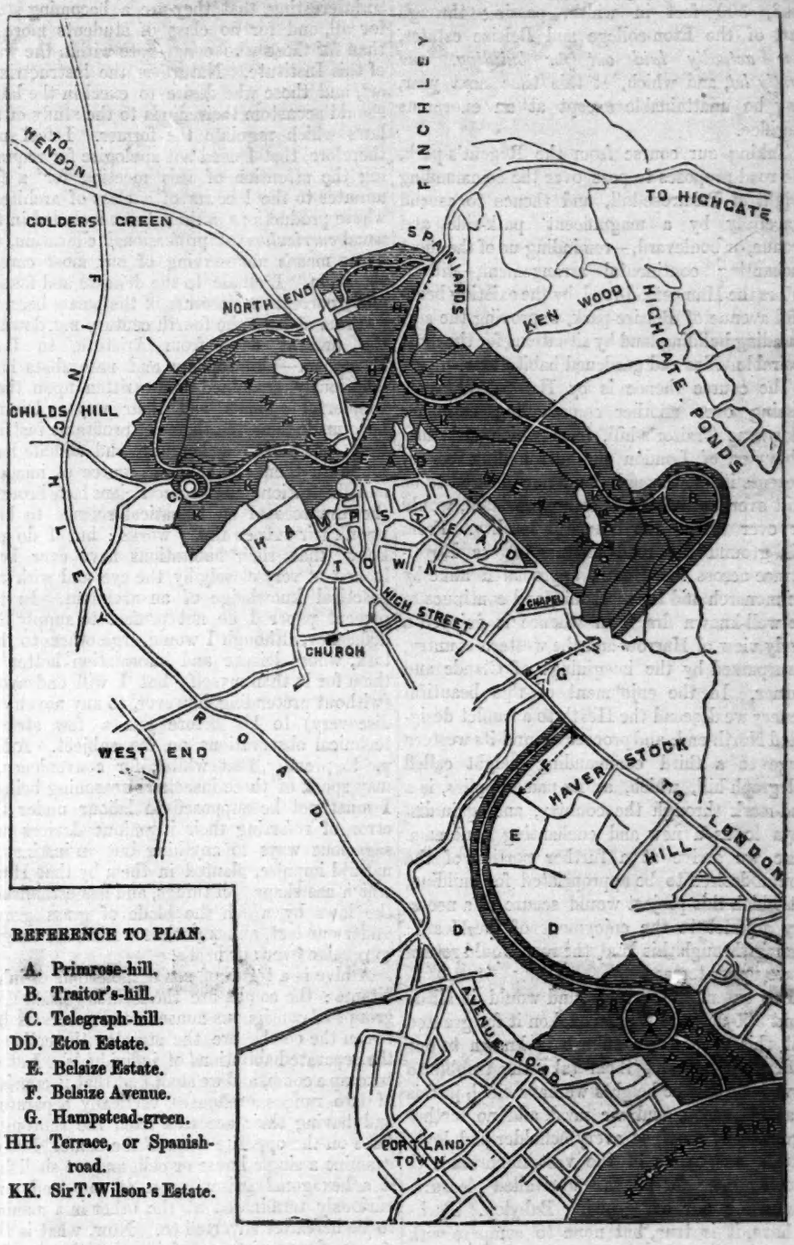
If we make a circuit around the rapidly increased suburbs of the metropolis, we can find no spot concentrating so many advantages for a public park as Hampstead Heath; indeed, it is unique, and may challenge the great cities of the world for a parallel suburb. Its height—no less than 425 feet above the Thames—commands views extending over the vast metropolis from east to west, to Shooters Hill on the one side, and on the other to the Surrey and Berkshire Hills, embracing Windsor Castle and an intervening country of surpassing beauty and variety, and proverbially healthy. Its sandy soil, of vast importance in our humid climate, insures at all times a dry and healthy recreation-ground; and in accessibility to all classes from all parts of London, it is unrivalled already, and the projected lines of rail from the east of London will render it still more convenient. It has long been the school for landscape artists: it is to London what Fontainbleau is to Paris, and the extent to which its picturesque beauties, undulations, and the wildness of the Heath, are enjoyed by the humbler classes on Sundays and holidays is refreshing to behold.

It is with the most unfeigned regret that we have seen this admired locality threatened by enclosure from surrounding buildings. One of the most extensive and beautiful views to the south-west has been already blocked out by the erection of three "London" houses. We may judge from these what would be the effect of a grant by the Legislature to Sir T. M. Wilson (the Lord of the Manor, now seeking that right), of the power of building over *some thousands of feet of frontage* facing the Heath, now beautiful meadows, and constituting the essential charm of this remarkable scenery. The old prediction of Mother Red Cap, that Hamptead is to be the future centre of London, may then be in course of verification, and, however whimsical this prediction may appear, we cannot close our eyes to the grave assertion of the Census-office, that in thirty-eight years the actual population of London, 2,500,000, will, at the present rate of increase, be doubled.

Legislating for futurity as well as for the passing hour, our Statesmen and Commissioners of Woods and Forests ought deeply to feel the responsibility of providing open ground ere it be swallowed up in this invasion of ordinary buildings.

Such an opportunity still presents itself at Hampstead, and we heartly rejoice at a plan, by Professor Cockerell, which we now present

PUBLIC PARK, HAMPSTEAD-HEATH.



to our readers for forming a park there, proposed to be connected with Primrose-hill and the Regent's-park by a boulevard or road, 300 feet in width, passing through part of the Eton-college and Belsize estates, *now actually laid out for building, and partly let*, and which, at this time next year, may be unattainable except at an enormous sacrifice.

Taking our course from the Regent's-park, the road proposes to pass over the commanding height of Primrose-hill, and thence to ascend gracefully by a magnificent park-ride and avenue, or boulevard,—reminding us of the most enchanting continental arrangement,—till it enters the Hampstead-road, by the existing beautiful avenue of Belsize-park, improving the surrounding building land by situations for the most desirable villas and gardened habitations.

The course thence is by Hampstead-green, passing over another commanding eminence known as Traitor's-hill, from which an admirable view of London and surrounding scenery presents itself, through land now desired to be built over, and which, if so appropriated, would for ever deface the beautiful locality. From this ground the road mounts to the Royal-terrace across the Heath, appreciated alike by the monarch and the mechanic, and continues to the well-known firs, from whence is enjoyed a lovely view of Harrow and the western country, unsurpassed by the imaginings of Claude and Turner. In the enjoyment of this beautiful scenery we descend the Heath to a hamlet designated North-end, and proceed around its western verge to a third commanding height called Telegraph-hill, which, as its name implies, is a land-mark through the country, and again displays to us a new and enchanting panorama. Here we arrive at a further portion of the ground desired to be appropriated for building, but which this project would secure as a necessary adjunct to the enjoyment of the Heath: passing through this land, the road would return to the upper terrace.

The extent of open ground would in all be about 300 acres. We have taken it for granted that this remarkable suburb is known to our readers; if not, let them take the trouble to survey it from the heights we have cited, in this pleasant season, and we need add no further argument to convince every beholder and lover of this metropolis of the vast importance of securing, once for all, this unrivalled pleasure-ground for our overgrowing Babylon. Parks we have, it is true, but none to compare with what this would be. Nature has formed it for the purpose, and art would seek in vain to improve it.

In point of cost, we believe it to be now attainable on terms absolutely moderate in comparison with its value, and which ought not to form the subject of jealousy to others, or justify hesitation on the part of a Government charged with the duty of providing for the moral and physical well-being of a working and overcrowded population. May we soon hear that the Government are engaged in securing such manifold advantages to the public, and that the scheme of which we have obtained the accompanying outline may have the fullest success.

It is remarkable enough that a similar project was entertained in the year 1778, as we learn from Park's "History of Hampstead." Portman-square at that time formed the northern limit of London: the beauties of Hampstead seemed even then attainable by the inhabitants of the metropolis, and the scheme became popular. How much more it should be so now, we need not say.

"What lovelier home could gentle fancy choose?"

AUSTRIAN WORKMEN.—Several thousand workmen have recently been discharged from the manufactories at Vienna in consequence of stagnation in business.

ON THE ARCHITECTURE OF THE HONEY BEE.*

THE processes of nature are so beautiful and so interesting, that they are a becoming study for all, and for no class of students more so than for those who congregate within the walls of this Institute. Nature is the instructrix of art, and those who desire to excel in the latter should accustom their minds to the study of the laws which regulate the former. I feel sure, therefore, that I need not apologise for requesting the attention of this meeting for a few minutes to the labours of a class of architects whose productions, although not included in the usual *curriculum* of professional education, are by no means undeserving of our most careful attention. I allude to the delicate and fastidiously correct architecture of the honey bees.

From at least the fourth century B.C. down to the present day—from Aristotle to Lord Brougham—philosophers and naturalists have laboriously examined and written upon these wonderful animals and their ways. Divines have made them the theme of profitable instruction; poets of every language and climate have found in them an abundant source of imagery and illustration; and geometricians have brought the resources of mathematical science to bear upon their extraordinary works: but I do not know that their habitations have ever been looked at very closely by the eye and with the practical knowledge of an architect. In the present paper I do not profess to supply this deficiency, although I would urge others to that task, whose leisure and information better fit them for it than myself; but I will endeavour (without pretending, however, to any novelty of discovery) to lay before you a few strictly technical observations on the subject. Allow me to premise, that whilst, for convenience, I may speak of these insects as reasoning beings, I must not be supposed to labour under the error of referring their ingenious devices and sagacious ways to anything but an instinct or natural impulse, planted in them by that Hand which has shaped all things, and has established the laws by which the blade of grass grows under our feet, and countless worlds are taught to revolve over our heads.

A hive is a town of some thousands of inhabitants: the combs are the islands (*insulæ*), or groups of contiguous houses: the intervals between the combs are the streets: the cells are the separate habitations of individuals. Let us take up a comb, and we shall find that it consists of two ranges of houses, vertically separated, and having their accesses from the thoroughfares on the opposite sides of the comb. Let us examine a single house or cell, and we shall find it a hexagonal prism, open at one end and curiously terminated at the other in a manner to be hereafter adverted to. Now, what is the course of reasoning, or of impulse, that has led to this system of construction? Were one of these little creatures endowed, in addition to its ordinary powers, with the faculty of speech, and asked to explain the principles on which its buildings were constructed, I apprehend that it would deliver itself in some such way as this:—"It is laid down for us by our great Master that the three main, co-ordinate, and dominant principles which should guide us in our construction are—*convenience, strength, economy*. We trouble ourselves but little about *ornament*, which those giants, men, have so much at heart: we are a mere drudging, practical, little people, well satisfied with what beauty may happen to result from order, symmetry, and simplicity. The two first great principles, viz. *convenience* and *strength*, need no comment, their necessity is self-evident; but the third principle, *economy*, requires some explanation: it is one of the most strongly-marked characteristics of our race. The material we build with is very expensive: we have first to collect it from far and wide, only at certain periods of the year; nor can we collect it in a useable state. We have to digest it by a tedious and irksome process, and we have then to elaborate it with much physical pains before we can apply it to our buildings. The expensiveness of our material, therefore, imposes on us a *severe economy*, and test us as you will, you will find that this is a ruling principle which we never lose sight of."*

Let us now proceed to apply the test. The problem which the little statistician has to work out is, "How to turn to the best possible account the least possible quantity of wax." In showing you how it proceeds to do so, I will abstain, as much as possible, from all reference to matters not bearing directly on the point, although every collateral circumstance is highly interesting.

The working community is divided into two gangs,—the wax-making gang and the wax-working gang. In commencing a hive the first-mentioned labourers deposit a cubical tablet, or wall, of wax at the summit of the cavity within which they work. As soon as this is advanced far enough, an individual from the latter gang walks up to it at once, and after scooping out a slight circular concavity, describes upon the face of it a hexagon. As this important act determines the plan of the whole structure, we must stop to search into the motives for adopting that particular form. The hexagon is one of nature's most favourite geometrical figures—perhaps the *most* favourite, after the circle: we find it on the shell of the echinus, and in various madrepores; on the scaly surface of many reptiles; on the hides of many pachydermata; and the eyes of the very insect before us consist, it is said, of thousands of hexagonal lenses. The hexagon is the characteristic form of many crystals; the basaltic columns of the Giant's Causeway are hexagonal; so are the bubbles in a basin of soap-suds. But in no case is this form the result of caprice or accident: it is in all cases determined through the agency of natural laws. In the three last-named cases, especially, and perhaps in them all, a force expanding equally on all sides from various equidistant points necessarily describes hexagons at all their planes of junction. No such law of necessity, however, influences the bee when she describes the hexagon above referred to. It was her ruling passion, *economy*, which led to its adoption.

A cell is built for the two-fold purpose of containing the larvæ, and, subsequently, the honey: it is to be both the nursery and the larder. What would be the figure best adapted for these purposes, and capable, at the same time, of being repeated contiguously over a large surface without waste of space or material? On a little reflection we shall at once see that the choice is confined to the triangle, paralellogram, and hexagon. Put together any other geometrical figure, and you will find that there would be perpetually recurring waste spaces. Of these three forms, the triangle is inadmissible; for it is altogether unconformable with the body of the bee, whether in its larva or its perfect state, and the acute angles would be most inconvenient for the deposit of honey. The square is better, but in all respects inferior to the only remaining figure, the hexagon, for the following reasons:—1st, the angles of a hexagon are more obtuse, and, therefore, more accessible than those of a square, being as 120° to 90°; 2ndly, the sides of a square are wider than those of a hexagon of a given area, and would therefore require to be made stronger, consequently, thicker; 3rdly, given the quantity of wax, the hexagon will hold more honey than the square, for the side of a hexagon whose area is 1· measures, nearly, ·620403, which multiplied by 6 makes 3·722418; whilst the side of a square whose area is 1· measures, of course 1· which multiplied by 4 is equal to 4·000000; therefore, the areas being the same, there is $\frac{277}{1000}$, or almost $\frac{1}{4}$ more surface of walling required to contain a square cell than a hexagon.

Let me next request your attention to the ends of the cells where they abut upon each other. If *we* were to build a double row of storehouses, or nurseries, back to back, we

* Read by Mr. Sydney Smirke at the Ordinary General Meeting of the Royal Institute of British Architects, June 13th.

* In one remarkable case the bees fail in their fidelity to this principle. In the construction of the royal cells they seem to merge all their ordinary feelings in a paramount anxiety to do homage to their queen. Reckless of space, they will sacrifice 100 cells in the formation of the palace, and the wax is piled on without regard to expense. Even their style of architecture loses its sobriety; for the surface of this excrescence is sculptured over with hexagons in bas relief, so shallow as to be of no possible utility. There may, however, be some traces of their natural thrift lurking beneath this sculptural profusion; for the wax scooped out from the shallow hexagons may not be altogether unacceptable in replenishing their exhausted stores.

should probably separate them by a longitudinal party-wall, running square and upright from end to end and from top to bottom. Not so the bee. We should also, no doubt, run our cross-walls right through, for it would be so much simpler, and save so much trouble to do so in building. Not so the bee, who thinks nothing a trouble if she can save wax.

Instead of placing her cells end to end, she *breaks joint*, as it were, making the end of each cell abut upon portions of three other cells, not with a square upright separation, but by dove-tailing the cells into each other, and terminating them with three planes, so placed as to form obtuse triangular pyramids. By this means, without diminishing the length of the cells, their sides are made shorter, and, consequently, stronger, and material is thereby economized. Every architect will, moreover, perceive that this series of diagonal planes, or braces, running through the centre of the whole comb, gives great stiffness to the structure; somewhat like a course of herring-bone inter-ties in a timber floor. This object of stability is still further promoted by working all these rhomboidal plates of much thicker films of wax than the sides of the cell. According to the measurements of a most distinguished observer (Lord Brougham), their thickness is to that of the rest of the cell never less than as 3 to 2.

But this is by no means all. These obtuse pyramidal ends are formed by three lozenge-shaped or rhomboidal plates, of which the angles are found by measurement to be respectively 109° 28″ and 70° 32″. Reaumur, one of the most eminent among the observers of bees, finding these angles to be uniformly and invariably adhered to, suspected that there must be some hidden reason for their adoption. He accordingly proposed to a distinguished mathematician (Kœnig), unacquainted with the above measurements, the following abstract question:—What ought to be the angle of a hexagonal cell with a pyramidal end formed of three similar and equal rhomboidal planes, so that the least possible material might enter into its construction? For the solution of this problem Kœnig had recourse to the infinitesimal calculus, and found that the angles of the three rhombs should be 109° 26″ and 70° 34″; showing a difference from the actual measurement of only two minutes; which difference, indeed, has since been shown to be owing to an error on the part of the mathematician, not of the bee. Certainly this is a very remarkable evidence of the light that may be thrown by abstract science upon the economy of these wonderful creatures.

I may here mention that my friend, the Rev. W. Mitchell, than whom few can have paid more minute attention to this subject, has discovered that the base of the cell is a portion of a true rhomboidal dodecahedron, like the crystal of garnet; and, moreover, that the whole cell may be built up of equilateral tetrahedrons, each side of which is exactly half one of the rhombs which form the base or end of the cell.

There is further evidence of mechanical ingenuity at the open or entrance end of the cells. On the outer edge is observable a thickening of the substance, forming a sort of lip or rim, and, of course, giving great additional rigidity to the work, exactly like the flange at top and bottom of a cast-iron beam; thus wax is saved by rendering it practicable to diminish the substance of the partitions. This rim is, moreover, of essential use in forming the foot-path, or *trottoir*, along which the bees are perpetually running. The excessive tenuity of the cell partitions is such that the constant traffic on these thoroughfares would speedily break them down, even were it possible for the bee to find foothold upon them.

I may here add that, when the bees find it necessary, owing to the accumulation of their stores, to increase the length of their cells, which is often the case, so scrupulously nice are they in their workmanship that they carefully remove this rim before they commence elongating the partitions, never failing, however, to add it again when the extension is completed; thus clearly illustrating the difference between industry and haste. Were they merely in a hurry, they would *make it do*, without troubling themselves to remove the thickening piece.

There is another nicety extremely worthy of observation. Athough to a casual observer the two series of cells appear to be parallel to each other, they are found, in fact, never to be so: they are invariably built with a slight dip downwards towards each other, and, usually, I think, a little curved. To attend to this nicety, without derangement of the plan, must greatly augment the trouble of execution; but the reason for it is obvious. The contents of these cells are fluid; this dip assists in preventing the escape of the fluid at the open end (although they have other more effective means of obviating this inconvenience); and, moreover, by these opposite dips the pressure of the fluid in the two abutting cells counteracts itself, and so to a certain trifling extent relieves, by the law of the resolution of forces, the bottoms of the cells from the vertical weight of the honey. Indeed, it may be strictly said, that throughout the comb the weight of the fluid contents in no case bears upon any horizontal surface; both at the sides and ends of each cell the weight is received upon the inclined planes which form it.

There are many other structural peculiarities to which I might invite your attention, such as the fact that the combs are invariably commenced with the small-sized cells, the combs being thereby made stronger, where strength is most needed, at their place of attachment to the soffite of the hive; just as we make a cantilever thickest at the insertion in the wall. Then the lenticular section of the combs is remarkable as being another device for obtaining strength without profusion of material. As the comb thins off at the edge, the cells necessarily become shallower, and thus rigidity is given to the outline of the comb. But I hardly feel justified on the present occasion in dwelling any longer on these details, although their very minuteness and delicacy appear to me to give them additional interest. It is not only upon a few broad, obvious principles that these insects work; nothing seems beneath their notice—no consideration too small for their regard, provided only it be calculated to promote the objects they have in view. I have repeatedly asserted that, besides the fitness and propriety of their habitations, one of their great objects is economy of material. Having shown you a variety of contrivances by which they endeavour to attain that end, it may be interesting to test their success by the general result. I applied for information to the proprietor of one of the largest cooperages in London, and I ascertained that the weight of an Irish butter firkin is usually about 14 lbs. and that, when full, the contents weigh 2 qrs. 16 lbs. or 72 lbs.; therefore, the weight of the butter is to that of the cask as 72 to 14, or 36 to 7. An experienced apiarist of my acquaintance—a sound and competent witness—informs me that, by repeated experiment, he has found that on an average hives furnish 60 lbs. of honey to 1 lb. of wax; therefore, in *this* case, the contents are to the cask as 420 to 7; and it becomes clear that the dexterity or efficiency of the workmanship of the bee is to that of the Irish cooper as 420 to 36; or, in other words, the one does his work about twelve times better than the other.

Whilst thus dwelling on the workmanship of the bee, it behoves me to add that it is at least equalled by the material. Nothing can exceed the admirable fitness of the substance, *wax*, of which her works chiefly consist. It is not one of the least marvels of this marvellous subject that the bee should, after swallowing some subtle dust which she finds in the depths of certain blossoms, be able in a few hours to secrete into pockets, ready for use, a substance which may be designated as the most imperishable and indestructible of all the plastic substances of nature. Air, light, cold, and moisture affect it not; it resists all the most corrosive acids, and the action of caustic alkaline solutions; nor will ether, which so readily dissolves resins and oils, touch it. The all-destroying and vivifying influence of heat alone seems to overcome its stubborn nature.

This leads me to a remark which, at the risk of a charge of prolixity, I cannot refrain from adding. For the easy manipulation of this singular substance a considerable amount of heat is necessary within the hive; and on that account, as well, perhaps, as on account of the necessity of warmth for the due nurturing of their young, there are few objects which the bee takes more sedulous precautions to attain than this, by selecting a sheltered locality for her residence, and by excluding the external air at all crevices with a natural cement (propolis), one of the special productions of that potent alembic, the bowels of the bee. But in close and sultry weather these precautions produce, naturally enough, some inconvenience. What steps, under these circumstances, do they take? Do they call in a Reid? No! they are far too well versed in practical science themselves to need any assistance. On this point I will take the liberty to quote the words somewhat condensed, of Kirby and Spence:—"During the summer a certain number of workers may always be seen vibrating their wings before the entrance of the hive, whilst a still greater number are engaged within it in the same employment. They stand in files: those that are without turn their heads to the entrance, while those within turn their back to it. The time that these ventilators devote to their function varies according to circumstances: some have been observed to continue their vibrations nearly half an hour without resting. Thus a constant current of air is established into and out of the hive. To satisfy himself that such an effect is produced, Huber (who was the first to observe the fact), having fixed a screen before the hive door, suspended within the screen from a thread small pieces of paper, feathers, &c.; they were immediately put in motion, being alternately repelled and attracted to and from the aperture."

We of the present day are glorifying ourselves greatly in the discovery that ventilation is needful for our well-being; but here has been an effective system of artificial ventilation—a sort of fan-blast—in regular practice among bees ever since God created them. Nor is this the only lesson of humility that these insects teach us. For ages we have been in the constant habit, when a man dies, of scratching up the surface of the soil immediately under our parlour and bedroom windows, and leaving his body to decompose there: thus the living and the dead jointly occupy every large and crowded town, the one exhaling and the other inhaling the gases generated by decomposed animal matter. What do the bees do? No dead animal is allowed for a moment to remain within the precincts of the hive. Even whilst dying the carcass is dragged out and ejected. The whole interior, indeed, is kept scrupulously clean. Should the carcass of an intruder be found too heavy for these tiny scavengers, aware of the poisonous gases that will be generated, and with an instinct that one would scarcely consider credible if it were not attested by unquestionable witnesses, they proceed at once to hermetically seal, or *embalm* the body, by enveloping it in a coating of propolis, the resinous cement which they apply to so many useful purposes; thus rendering perfectly innocuous that which their feeble physical power prevents them from removing.

After all, perhaps, no part of the wonderful piece of architecture before us is better calculated to strike *us*, as draughtsmen, with astonishment, than the precision and truth with which the honey-comb is drawn and executed: the nice accuracy of the mitres, the exact coincidence of the angles; and the perfect regularity of all the forms. The nine planes which form the sides and end of a cell form also corresponding planes of nine other contiguous cells: it is obvious that a single blunder would throw all into disorder: yet all is never-failing order. "Where is the architect" (asks Kirby, in his "Mongraphia Apium"), "who can carry impressed upon the tablet of his memory the entire idea of the edifice he means to erect, and without rule, square, plumb-line, or compass, can cut out all his materials to their exact dimensions, without making a single mistake or a single false stroke? Yet this is what these little animals invariably do, and thus teach us how much more wonderful and certain instinct is than all the efforts of our boasted wisdom, which, after many painful processes, interrupted by numerous errors and failures, and by a long train of deductions, cannot arrive at that expertness and certainty which these creatures manifest spontaneously, working at all times with unerring precision."

Such a comparison between the results of human reason and the instincts of these small

creatures seems almost to justify the bitter sarcasm of the poet—

"Il est vrai que la raison de tout temps fut son lot,
Mais c'est de là je conclue que l'homme est le plus sot."

Although this subject cannot fail to inspire an interest in every ingenious mind, yet I entertain some doubt whether my theme has not been carried somewhat beyond its due limit. I, therefore, beg to offer as an apology my desire to do justice to the beautiful subject which I have endeavoured, as a practical architect, to illustrate; and also to heighten the admiration with which every careful observer must contemplate the works of an insect in all ages regarded as the very type and symbol of virtuous industry.

ADDITION TO TRINITY COLLEGE, DUBLIN.

THE building about to be added to Trinity College, Dublin, will be 160 feet long, 90 feet wide, and 50 feet in height to the eaves. It will contain ten lecture-rooms, most of them about 38 feet by 30 feet. In the upper story there will be two lofty museums, 84 feet by 38 feet, and a drawing-school 72 feet by 25 feet. The hall and staircase will display in their columns and fittings the marbles of the country. The exterior will be of Portland Stone.

The style which has been adopted by the architects, Messrs. Deane and Woodward, is the Venetian Cinque Cento. The design is founded, to a certain extent, on the front of the *Palazzo Dario*, on the Grand Canal, Venice, given in our ninth volume, p. 202, and that of the *Casa Visetti*, in the same volume, p. 433. It will be a novelty with us.

DRAINAGE, DISEASE, AND DEATH AT CROYDON.

IN carrying out all future sanitary improvements, the case at Croydon is likely to serve as a precautionary and an instructive one. That the disease and death there associated with the new drainage ought to constitute a check to such improvements, or a warning against them, cannot for a moment be admitted, even in the face of a deliberate engineering and medical report to Government that the drainage has done it all. Hasty thinkers may be very apt to conclude that since Croydon was healthy without sanitary improvement, and since sanitary improvement has brought disease and death to its doors, we ought to let well alone, and set our faces against sanitary improvement. But, on the contrary, though compelled to admit the mischief done and the errors committed, in the case of Croydon, the tremendous and rapid power of filth for evil, though denied by many, has been so unequivocally manifested, that we ought to be only all the more convinced of its perils, and all the more determined to conquer in the good cause of sanitary reform. That the sullage of towns is a source of danger not to be tampered with, is now but too evident, if evidence were wanted to assure us of its danger. And again we say, that the case at Croydon will be likely to be an instructive, though precautionary one, and of important advantage in the future promotion of sanitary improvement in towns.

For the information of those who may not know or recollect the nature of the case at Croydon referred to, we may here observe, that since the execution of new works, intended to improve the sanitary condition of the town, an epidemic of a new description has occurred there, so that in a population of about 16,000 persons, there have been about 1,800 cases of fever since August last, with a mortality of about sixty, besides very numerous cases of diarrhœa and dysentery, with a mortality of about ten.

There are numerous springs at Croydon, which suddenly accumulate from different parts of the town and neighbourhood, to form at once the considerable stream of the Wandle. One of these springs, called the Bourne, is of rather capricious habits: disappearing sometimes for ten years at a time, and then all of a sudden overflowing its old and grass-covered, flower-wreathed *bed*—if we can call that *its* bed on which it only temporarily rests at such long intervals,—and, swelling to a torrent, it continues to flow for two or three months, and then as suddenly vanishes. It is little wonder, therefore, that amongst the community at large in Croydon there are old superstitions indelibly associated with "the Bourne." One of these is to the effect that pestilence assuredly comes with the Bourne, and with it disappears. Now, it is rather a curious circumstance that the Bourne did run lately for nearly three months, and that as it has again vanished, so has the epidemic!*

We have another purpose, however, in alluding to these streamlets than merely to narrate one of those "curious coincidences" associated with, it may be, an idle superstition. It is believed to have been the water from these springs, in the first place, and that from the Bourne in particular, which has actually led to most of the mischief done by the new drainage at Croydon. These springs are said to have overflowed the pipe sewers and checked the drainage; hence the epidemic. But before we enter farther into particulars on the subject now in hand, we have a few preliminary explanations to give in order to show the authority on which we base our remarks.

A representation having been addressed by the chairman of the General Board of Health to our excellent Home Secretary, Lord Palmerston, to the effect that fever had sprung up and spread itself extensively in Croydon since the establishment of new works for draining and supplying water to that locality,—that it had been suggested that these works were influential in producing the disease,—and that an inquiry therefore ought to be instituted; his lordship forthwith instructed Dr. Neil Arnott and Mr. Thomas Page, C.E. to investigate and report. These gentlemen have done so, and their joint and separate reports have just been printed together, and presented to both Houses of Parliament by her Majesty's command. Our purpose in this article is to give our readers some idea of the contents of these reports. They comprise a brief general report by Dr. Arnott and Mr. Page jointly; a medical report by Dr. Arnott, including a summary or general view, both engineering and medical, followed by a practical and valuable supplementary memorandum on the origin and nature of fevers and epidemics; and finally, an elaborate engineering report by Mr. Page upon the proceedings, the plan for sewerage, and its engineering features. Appended is an abstract of the evidence taken in short-hand at Croydon.

The general report in the outset thus concludes:—

"We regret to state that the result of our investigations is a conviction that the operations of the plan for the sewerage have been influential in producing the disease, and that the absence of proper provisions in that plan for some of the general requirements in town drainage, and the especial requirements of Croydon, has been productive of misfortune to the inhabitants; but that as the causes of such a result are evident, there will be no difficulty in rendering Croydon as desirable for its salubrity as it is for the beauty of its site and its proximity to the metropolis."

The especial requirements of Croydon, we may here remark, relate mainly to the springs, of which we have already spoken. The reporters state that while introducing a new system of drainage with small stoneware pipes, exhibiting a contrast to ordinary drains, inasmuch as it has been deemed a merit that they were only large enough to carry away the house and rain water, and were intended to be impermeable, with water and even air tight joints,—sufficient provision ought to have been made for the safe conduct of the water from the local springs, whereas such waters had to find their way to the river by what remained of the old faulty drains rendered now more unfit from being cut and interfered with by the new drains, or by overflow; and the stoneware pipes, instead of being impermeable, appear to have freely admitted this spring water, which "filled the small pipes so as to produce not only serious obstruction to the onward passage of the sullage water, but total obstruction to the passage along the pipes of all foul air from sinks and closets, so that the ventilation of these in the direction of the water current as intended in the plan was rendered impossible. "As to that foul air, one of the reporters remarks that its breaking forth after being confined, "indicates great part, it is to be feared, of the evil resulting from the Croydon drainage." The permeability of the pipes appears to be so far explained (at least it seems to us to be so) by the statement of the engineering reporter, that they were not sufficiently burnt, and that they were too thin; for if not sufficiently burnt they might absorb water, freely at all points, if steeped in it, as they seem to have been. Moreover, this defective formation and thickness are said to have rendered them more frangible after being in the ground for some time, and in many places, indeed, they were found broken, either from the mere superincumbent weight of earth, or from the passage of waggons, &c. over them. As to the thickness of the pipes, Mr. Page says,—

"The thickness of one of the 12-inch pipes used at Croydon was ¾-inch full; the thickness of the 16-inch by 12-inch pipes used at Manchester is 1¼, and that of the 12-inch pipe approved by the Metropolitan Commissioners of Sewers is 1½ inch; these last-named are therefore twice the strength of the Croydon pipes, the thickness of which does not appear to have been specified.

It seems extraordinary that when 100 yards of pipe in one place were found broken at Croydon, and a half brick arch was turned over 100 yards of new pipe, no attempt should have been made to obtain pipes of a sufficient strength to resist the pressure, and thus to have improved the manufacture of the article, instead of adopting an expedient calculated to bring much discredit on the pipe system."

In contrast with this state of matters in regard to the *new* system of pipe sewerage, let us see, by the way, how the old Roman, and the still older Assyrian, pottery-pipe drainage was managed. We have only to quote the passage which follows in the same report:—

"The references by the General Board of Health to the Roman and Assyrian work in which pottery-pipes were used, possess great interest not only as affording illustrations of extraordinary adaptation of the means to the end, but in adding another example to the numbers existing in the case of the Romans, of the excellence of their workmanship. It is a matter of surprise that the example afforded by the Roman pipes near Zurich, their continuous bed on broken pottery in mortar, their joints surrounded by concrete, should not have been followed at Croydon, instead of the expedients above described: such a course would have avoided many of the evils which have resulted from imperfections, especially in the temporary method of forming the joints.

In the Roman and the Assyrian works there is, however, ample evidence that in those days competition contracts were unknown."

We select the following passages from the reports, abridging one or two of them somewhat, as containing the gist of the whole so far as it can be given in moderate compass.

In his general view or summary of the facts, partly medical, partly engineering, Dr. Arnott says:—

"Besides the now apparent unsuitableness of small pipes to the peculiar state of Croydon during the last season,* the Croydon experience has given evidence of other accidents causing diffusion of hurtful malaria, to which the pipe drains are liable merely because of their fragile nature and smallness. Very different and favourable results are described as being obtained in other places, as Tottenham, Rugby, &c. but both kinds of occurrences have to be considered in judging of the new plan. In a book kept at the town-hall of Croydon upwards of fifty stoppages of main-pipe sewers were recorded during the early months of their existence, while a still larger number of stoppages, not recorded, are known to have happened in the smaller or private house drains, occasioning altogether great annoyance, malarial nuisance, and expense. The causes of the obstructions were very various; for instance, breakages of pipes from weight of incumbent earth, or from heavy carriages passing on the road over them, subsidence or bending of portions of the drain in yielding ground, arrest of bulky solids accidentally or maliciously introduced into the narrow channels, fibrous substances like hay, human hair, thread, pieces of cloth, &c. sticking together with other sullage matter, and gradually growing to the condition of complete plugs. . . . . It is true also

* Camden alludes to the superstition regarding the Bourne at Croydon as existing even in his time. The breaking forth of the Bourne, he says, was looked on then as "presaging dearth of corn, or pestilence, and that the events some time ensuing hath procured it credit."

* And it ought here, in fairness to pipe drainage, to have been added, to the want of efficient separate drainage for the springs.

that still in other localities failures and disappointments like those at Croyden have occurred, leading in some cases to the removal of the pipes and the re-adoption of the brick structures. In Leeds and Manchester, the combination of impermeable tubular drains for single buildings or small areas with larger channels of stronger construction and suitable inclination for main sewers, is said to unite the advantages expected from the tube system with the security against accidents which belongs to the brick channels. The assertion will not be disputed that the impurities of a town should not be drawn to one point until plans are completely matured for disposing of them, so that no new grievance shall arise. Yet at Croydon the existence of the general filter-house so near the town, the arrangements at that house, the emission of the foul residual water from it into the Wandle, and the daily irrigation with much unfiltered sullage of Waterman's Meadow, also near the town and near good houses of the suburb, are faults in this respect. In conclusion, then, with regard to Croydon, it appears that the works required there are not yet complete, but there cannot be a doubt that with a system of drainage suited to its peculiarities, accompanied by other subordinate arrangements, Croydon will be one of the most healthy, as it is already by its position and other natural advantages one of the most convenient and generally desirable residences near the great metropolis."

In his conclusions on the merits of the scheme, Mr. Page says:—

"If the plan be judged by the principle of *arranging the sewerage according to the requirements of the population, so that its working shall leave nothing to be desired for their convenience and health*, then it must be accounted a *mistake*—not in using pipe-sewers, but in using them to an extreme in length and in diameter, and of insufficient strength—in not providing openings for examination at frequent intervals—in neglecting any means of ventilation—in interfering objectionably with private property and domestic comfort, by adopting the system of back drainage—in not arranging the inclinations with regular gradations, and in avoiding brick-sewers where these would have been advantageous. In the disposal of the sullage, which ought to have been based on its ultimate utility, the plan is objectionable in establishing a disgusting process for the separation of the solids near enough to the town to create a nuisance—in discharging the sullage into the river, which all other operations of the plan were calculated to free from impurity—in establishing irrigation by sullage water too near the town, and in not providing sufficient land drainage. Although engineers may be expected to pay more attention to the utilitarian than the artistic, there are few who would not in this case have scrupled to insult the "genius loci," by burying the springs of the Wandle and the Bourne in culverts and pipes, and polluting them with foul water when they appeared above ground."

The following passage may be instructive:—

"Amongst the substances found in the drains as causes of stoppage, Mr. Cox, as well as Mr. Austin, enumerates 'flannels, hay, shavings, paper, hair, pieces of stick, kittens, a nightcap, a dead cat, pigs' entrails, a bullock's heart,' &c.; and Mr. Cuthbert Johnson complained that from the slaughter-houses paunches and hearts were sent into the sewers. There can be no doubt that all these matters should have been carefully prevented from entering the sewers, especially pipe-sewers; reference, however, to the 'Elementary Maxims to be kept in view in the drainage and cleansing of towns, printed by the General Board of Health, for the use of Local Boards and their officers,' will show that the latter are enjoined to provide that 'blood, semi-fluid offal, garbage, and refuse of every description which may be capable of safe removal in the drains by suspension in water, from slaughter-houses, markets, shambles, stables, cow-houses, or manufactories, be conveyed into the drains on the principle of the soil-pan apparatus, taking care that such refuse be led as directly as possible into those main pipes which have the largest, quickest, and most constant flow.' It is evident that a maxim so comprehensive in its application as this, must invite a system of forcing into the sewers of every kind of rubbish 'capable of removal by suspension in water,' without observing the General Board's condition of its passing through the soil-pan, and must doubtless have led to frequent stoppages in the pipes: it is happily contrary to all good practice to allow matter of this description to pass even into brick sewers of large dimensions, and it might be concluded of much greater consequence to prevent such substances entering pipes of such contracted dimensions as those which have been used at Croydon, where the stoppages complained of have in many cases resulted from the introduction into the sewers of the very substances recommended by the General Board of Health to be passed through their channels, but without the precautions enjoined by the Board.

On the question of responsibility, the following quotation will show generally the opinion of the engineering reporter:—

"The history of the proceedings at Croydon shows that the General Board required, previous to their sanction being given to the plan, &c. that an engineer, appointed by them, should report upon it, and that in consequence, the engineer they appointed became the engineer of the Local Board,—that he made alterations in the details of the plan adopted by the Local Board with a view to improve it,—and having then reported in its favour, the General Board gave their sanction to the project, stipulating, however, that no expense should be incurred without the approval of their superintending engineer, whose certificate should be necessary previous to any outlay; by which conditions it would appear the General Board assumed great responsibility.

The plan proposed by the Local Board was free from many objections to the plan approved by the General Board. The pipe sewers were of larger dimensions; land drainage and the clearance of all nuisances are stated to have formed the first features; the use of the sullage for agricultural purposes, either by irrigation or otherwise, was contemplated; there was no screening-house, no direct discharge of filth into the Wandle; and if the least perfect disposal of the sullage, indicated by the plan and report, had been finally adopted, viz. the irrigation of land, it might have been effected at a greater distance from the town than Waterman's Meadow, where the refuse from 766 houses, or about 4,500 inhabitants, is daily discharged upon 17 acres of land.

The plan approved by the General Board of Health contained nearly 1¼ mils of 4-inch pipes in lieu of 6-inch, 7 miles of 6-inch pipes in lieu of 8-inch and 9-inch pipes, and so on in proportion.

It has been shown that this change in the sizes of the pipes produced serious evil; but beyond that, the General Board, in approving the plan, sanctioned the establishment of a disgusting and probably pestiferous nuisance close to the town, in the case of the filter-house; countenanced the pollution of the water of the Wandle by making it the outfall for the sullage, when the other operations of the plan completely freed it from impurity, and were not apparently cognizant of the absence of proper provision for such land drainage as the geological position of Croydon, and its connection with the Bourne water, imperatively required. No sections of strata were obtained; no sections of the lines of pipes provided. The working of the plan has been given in detail: the lower main sewers were filled with the Bourne water, which flooded the filter-house and stopped its operation—the whole mass of the filth was thrown direct into the river—the smaller sewers and the house drains were choked—the sullage was forced back into the houses; there being no provision for ventilation, except in the direction of the outfall, the noxious gases escaped into the dwellings; an unprecedented amount of disease (attributable in great part to these results of the sanitary arrangements) spread in the town, and yet the responsibility of the failure of the plan, of the destruction of health and life, and of the injury done to the interests of the inhabitants would rest, according to the "general conclusions" of the General Board of Health, with the Local Board.

Should the proceedings with reference to the sewerage of Croydon be repeated in other places where sanitary improvements are carried out under the Public Health Act, it is evident that evils may arise from the want of a right understanding as to the party responsible for the principles, details, and working of the plan, and it may result that, independently of the injurious consequences to the inhabitants in expenses, nuisances, and disease, where failure may occur there will be a disposition on their part to charge the General Board of Health with responsibility which ought not to attach to them, viz. the grave responsibility of consulting engineers.

It may here be remarked that the responsibilities of Local Boards of Health are considerably increased, their efficiency limited, and the expense to the inhabitants in all improvements much augmented by the want of compulsory powers of purchase in the Public Health Act. There are objections to this power being given, but if it could be arranged under reference to the General Board of Health, and, if requisite, to some legal authority to prevent its being abused, it would conduce materially to the economy and perfection of sanitary improvements."

On the whole subject, Dr. Arnott remarks, at the close of his report, that,—

"Although in Croydon now, things for the time may appear to be going on well, since the rains and the overflow of the Bourne have ceased, and there are no longer cesspools in the houses or gardens (this, however, at some cost as yet to parties living near the filter-house or on the banks of the river), and there is everywhere an abundant supply of good water, and most of the cases of defect or faulty placing of the drain-pipes may have been detected and mended,—changes which during favourable weather will secure a great improvement on the former state of the town,—still there should not be delay in proceeding with works which shall remove radically or for ever the evils that have recently existed."

In conclusion, we may remark that the engineer's report contains much valuable information as to the details and results of the scheme of small-pipe drainage and sewerage as carried out, either partially or wholly, in various places, as at Manchester, Tottenham, Leeds, and London.

ST. GILES' AND BLOOMSBURY BATHS AND WASHHOUSES.

THE Baths and Washhouses built in Endell-street, under the superintendence of Messrs. Baly and George Pownall, were opened on the 30th ult. The institution comprises two swimming-baths, seventy-three private baths, and fifty-six washing-places, with all the approved mechanical arrangements adapted to the comfort and convenience of the persons for whose especial use the institution is designed. Each swimming-bath contains about 25,000 gallons of tepid water, constantly flowing through the bath. The private hot and cold baths are of various materials,—porcelain, enamelled iron, and zinc. Each bath contains nearly fifty gallons of water, and is in a separate room.

Each washing-place has a boiling-tub, supplied with hot-water or steam, and a trough supplied with as much hot and cold water as the washer requires, and a separate compartment in a hot closet for drying.

We shall give plans and other illustrations of the building in an early number.

SIGHTS AND SCENERY.

The Royal Italian Opera-House.—Crowded houses every night attest the appreciation by the public of the powerful corps and band engaged at this theatre. For M. Berlioz's opera, "Benvenuto Cellini," the scenery would appear not to be new, with the exception, perhaps, of a charming moonlight for the carnival. In this the management were wise, for though an able production, full of science, the opera is not likely to be popular. It ends with the casting (on the stage) of Cellini's statue of Perseus. For an elegant little ballet, "Fleurette," Mr. Beverley has painted some effective architecture of Titanic masses, and a fairy landscape, weaker in the design of the lower part than is usual with him, but still very nice.

Theatre Royal, Adelphi.—Mr. Webster, up to this time, has scarcely manœuvred the powerful company now under his command in the Strand, so effectively as Lord Seaton does his at Chobham,—having contented himself mainly with the repetition of well-known movements, of which the public must have had nearly enough. The other night, however, he brought them altogether into a combined attack on public favour, and carried his point with flying colours, as well he might when he himself, Madame Celeste, Mrs. Keeley, Miss Woolgar, Keeley, Leigh Murray, O. Smith, Paul Bedford, and Alfred Wigan, fought in the ranks, and did their best to win. Leaving the tent for the stage, "Geneviève, or the Reign of Terror," the title of the new piece, is a genuine Adelphi drama, full of action and strong effects. Without otherwise particularizing, Wigan, who is one of the finest actors of this or any other time, renders his part a series of pictures of remarkable power. The scenery is all characteristic, and some of it very effective, although the "Court of the Temple" is not correct architecturally. The groupings are very spirited and artistical.

Surrey Theatre.—Meyerbeer's opera, "Robert the Devil," is being played here to immense crowds, and not discreditably in a musical point of view; but the scenery is perfectly disgraceful. It would not occasion any great wonder, perhaps, to find at a theatre of this grade that none of the scenery was quite correct, but to see the action of a piece professing to represent

the people and manners of the eleventh century carried on in a *Louis Quatorze* room of most ferocious design, is a reproach of ignorance to the management which they should forthwith remove.

DANGERS AND DISASTERS.

A wooden girder of Pothouse-bridge, Bilston, broke lately while an engine boiler of 16 tons weight was crossing the bridge. The boiler was nearly pitched into the canal below.

Part of an old building at Preston, belonging to the Local Board of Health, fell on Saturday week, while "two horses and a man," as our authority describes them, were within it, but escaped without injury.——While a plumber was lately engaged in putting some lead on the roof of a house near All Saints' Church, Preston, one of the coping stones at the edge of the roof gave way. He fell on the pavement beneath, alighting on his head, and was so much injured that he died in course of the same day.

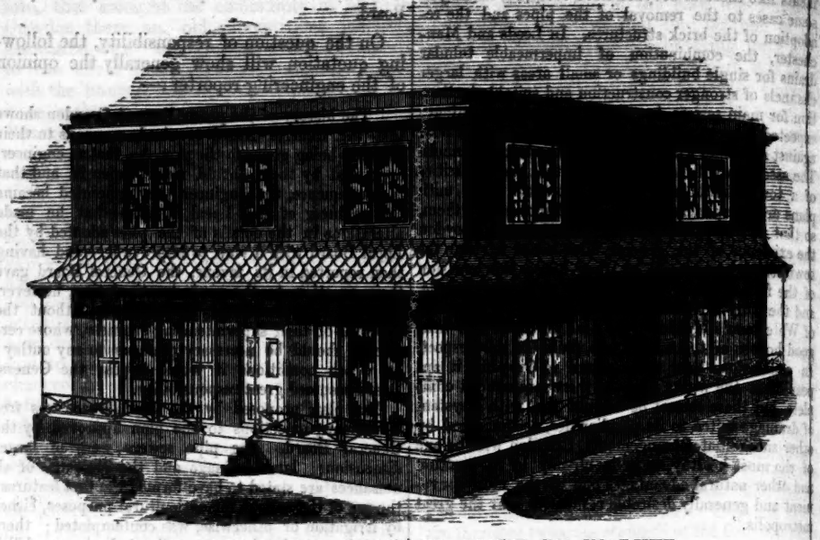
A house at Silkstone, Barnsley, fell lately, after giving barely sufficient warning for the family to escape.

A young man employed at one of the quarries for the Holyhead Harbour works has been shockingly wounded by the handle of a crane, which, by some mischance or carelessness, was allowed to overpower those who were heaving.

Damage to the extent of 1,000*l.* has been done to Skipton Church by the shattering of a pinnacle to pieces, and other mischief done, by a thunder-bolt, which is described as afterwards "coming down the outside of the flue like a large ball of fire, and dividing or exploding in the middle of the church with frightful noise [while the congregation were within] and passing through the church in several different directions, making holes through the masonry and windows in its passage out," and shattering pews. Strange to say the only damage done to any one of the congregation consisted in the burning of part of a lady's dress. The church was filled with soot and dust, and great alarm was felt, yet, to the credit of the congregation, there seems to have been no general rush to the door, as so often leads to farther mischief in church panics. Had the lightning not expended its force previously on the pinnacle, the congregation might not have escaped so harmlessly. It is really criminal in those who have authority over such edifices not to use every exertion to procure a lightning-conductor for the spire or tower of the church. There was no such "way for the lightning," of course, in the present instance, although it is said that the building had been before struck by lightning. Here, we may add, seems to be another and new danger in church flues: where there is no lightning-conductor, they act as most dangerous conductors themselves.

ARCHITECTURAL COMPETITION.

I should feel obliged if you would insert another phase in the competition pestilence, looking on the other side of the picture to what your correspondent, "An Architect," did in your last number but one. I take the letter as directly thrown at myself without any just cause from the author. I have been in the profession fourteen years, and have an engagement in the office of "Messrs. ——," which I have held for some years; and it is true your correspondent did engage a younger brother of mine a few days ago; and it is also very true that we were the successful competitors in obtaining the 5*l.* competition to which he sarcastically alludes, when thirty-five other designs were submitted. Surely these could not all have emanated from clerks or gentlemen under engagements. I could show that the step he has taken amounts almost to a breach of confidence; and as this attack has been made with a view to put down clerks trying to practise for themselves, I shall endeavour to put up a building that will bear the strictest scrutiny by him or any other member of the profession. And I would suggest to all architects in future taking articled pupils at the small premium of from 300*l.* to 500*l.* to have it specified in their articles that they are never to enter the profession on their own account until they have sufficient business or capital to fall back upon without being driven to clerkships. But should this fail, the only alternative left is to remunerate clerks sufficiently, so that competition may not be worth their while, until they are in a position to demand a patron. AN ARCHITECT'S CLERK.



IRON HOUSE FOR CHAGRES, MADE BY WALKER.

IRON HOUSES.

The Royal Mail Steam Packet Company are about to establish a permanent and efficient staff at Chagres, and have taken the initiative by ordering the construction of an iron house for their superintendent and other officers at that port. The annexed drawing (which might be more correct in perspective) represents the edifice, which is composed almost entirely of galvanized sheet iron, and has been constructed at the factory of Mr. Walker, at Mill Wall, Poplar. It consists of two spacious floors, with four large rooms on each, and is surrounded by a veranda, and there are out-offices as well. When it arrives at its destination it is to be fixed upon iron pillars about 4 feet from the ground, and is to be placed on a pier at which the company's steamers will touch Chagres. Although it is, of course, to be taken to pieces in order to be embarked, and will weigh about 40 tons, yet when erected, as it now stands in Mr. Walker's factory, it will present to the eye the appearance of a perfect, permanently built private residence, within and without, in all the details of paper, paint, &c. The floors, staircases, door, and window-frames, are all of wood, but the sashes of the latter are of iron, and the glass for them is ready cut and fitted, and will be sent out with the other fixtures. There is also to be sent with it an iron safe or "treasury," also of Mr. Walker's construction, for the purpose of depositing the mails, &c. for safety on arrival. This is a large square room, constructed of corrugated iron, 21 feet by 15, and 12 feet high, and both buildings will be secured from accident by fire as far as possible by a lining, a few inches from the iron walls, of patent felt.

At the present moment Mr. Walker's factory presents rather a busy scene, for, in addition to the above, he has in course of construction thirty-six iron houses for the residences of emigrants sent out by Government to Australia. The factory itself occupies a space of about three acres, on which over 400 men are continually employed at a weekly expenditure of about 800*l.*

Measuring London for its Cabs.—The metropolitan police commissioners have issued orders for a measurement of all the leading thoroughfares and principal streets in London, as the new Hackney Carriage Act comes into operation this month. The results will be embodied in tables at the cab stands.

New Gateway in St. James's Park.—It would be a great desideratum if a new gate were made at the north-east point of the railings in St. James's Park, opposite the Duke of York's Column: the public might then, in passing to and from Birdcage-walk, walk inside the Inclosure, which would be more pleasant and private than the outside; and it would be especially convenient to pedestrians coming from, or going towards, Buckingham Palace.—J. D.

THE LABOUR MOVEMENT.

Since our last, the following correspondence has passed between the Committee of Carpenters and the Secretary of the Builders' Society:—

"In answer to yours of 24th instant, the Committee of the Carpenters' movement having throughout strenuously exerted themselves to prevent strikes, deeply regret that their endeavours have been so slightly appreciated by the employers, who seem to hold the executive amenable for the actions of those over whom they had no control.

They further state that what has been misconstrued into a threat was never, on our part, intended as such, particularly if the employers consider it as intimating a strike.

Had the Committee decided upon adopting such a course, the policy of intimating such hastily to the employers would have been questionable: even if such had been the case, extenuating circumstances might have been pleaded, from the fact of a not over conciliatory intimation from the employers relative to the closing their shops appearing in that evening's *Builder*.

In concluding the correspondence, the Committee, feeling the responsibility attached to their position at the present crisis, cannot suggest any other means of effecting an amicable adjustment of differences, only by deputation, which they hope the employers will receive. On behalf of the Committee,

(Signed) J. CALLAGHAN."

In acknowledging it (on 28th), the Secretary said:—

"I am at loss to understand the meaning of the closing sentence in your letter of 18th,* if it does not mean a threat. The Committee of delegates profess anxiety to discountenance strikes, and yet the chairman of the meeting on 13th instant, avowed that he had subscribed to support the men out on strike. It is very difficult to understand how this latter *act* can be justified with the previous profession."

On Thursday evening (30th), a meeting of the Builders' Society was held at the Freemasons' Tavern, but no further formal step was taken, or resolution come to. The meeting seemed to consider that Mr. Callaghan's letter might be allowed to close the question of strike—at all events, that it was not expedient to fret the subject by further correspondence. Messrs. Brass, we understand, have obtained new men, and a portion of Messrs. Lucas's have offered to return on Monday, at the old wages.†

Can you afford me space in your columns for the expression of an opinion or two on the present struggle between the carpenters of the metropolis and their employers?

I am one of your readers who has worked with them, and suffered with them, and who knows from better experience where the shoe pinches; and I fully

* Page 402 ante.

† "A London Builder" urges that a public meeting of master builders should be held forthwith.

believe that the time has come when a more equitable adjustment of the wages question must be established.

The movement is one of vast importance to all; it is not confined to a few nor to this branch of trade alone, but is daily gaining ground among operatives of all classes throughout the country, and were it not for this and the fact that I have not yet seen, either from the men of the different firms "now out on strike," or from the association of delegates, any proposition practically good in itself, or likely to be permanently beneficial to the interest of the working men, I should not have ventured to address you.

I would ask of my fellow-workmen, are not the interests of the employer and employed identical? If one cannot exist without the other, any infringement of the rights of either must be prejudicial to both. It matters but little to the employer whether he pays 6s. or 7s. per day so that he gets his profit. If the rate of wages is increased, the cost of material necessarily rises in a like proportion, so also must the ultimate cost to the consumer increase—the result of which will be, that the capitalist will seek other investments, and the working man be the loser after all.

Hence arises the necessity for a better understanding between master and man. As to the ridiculously absurd notion concerning partial strikes, recently advocated at a public meeting, I rejoice to find that in the present movement, in the majority of cases, all such notions, together with the sickening cant phrases of "tyranny of employers" and "cruel combinations," have been cast to the winds, and a disposition evinced to be guided by reason and justice. I hope the result may prove the truth of it.

I do not address you as the apologist of employers nor as an opponent to the privileges of the workingman, but as an earnest advocate of the principle of paying every one according to his merits; and I fully believe that the remedy for the present evil does not lay so much with the employer as with the employed. I entreat my fellow-workmen to set aside for the present all old prejudices, and to think for themselves, individually, and not to let the clamour of the mob or the fear of combinations among themselves intimidate them from acting as the dictates of reason and justice suggest.

Let them seriously put to themselves the question, "How shall we be better?" without endangering the interests of the trade. This, sir, is the question of greatest importance; and the more the present time is wasted in useless deputations, or frittered away in worse than useless speeches and resolutions, the more certain will be the failure of our objects and the ruin of those of our warm-hearted but misguided brethren who have thought fit to leave their employers. What have partial strikes and all such misunderstandings brought us to at present? Were there such things as sawing-mills, planing-mills, moulding machines, morticing and sash-making machines, thirty years ago? And if we, the working men enforce it, in a few years will there be much left but a little fixing for the carpenter to do?

Will the adoption of the piecework system better us, even supposing it could be universally carried out? Would it not lead to a slavish competition between man and man, between animal strength and intelligence? Quantity and not quality would be the rule; and the result would be less beneficial morally and physically to the operative than to the employer.

Will the demand for the extra sixpence per day, which is being gradually acceded to, permanently benefit us? I deny that it ever will; for it is based upon injustice: the principle is inconsistent, and equally as prejudicial to the interests of the intelligent workman as to the employers. Are there not good and bad workmen, quick and slow, steady and unsteady ones? and I will ask any skilful, intelligent, and persevering journeymen, do you feel that justice is done you when, after years of practice and experience, and with, perhaps, the additional responsibility of a wife and family, you are only placed on the same scale of remuneration with your bench-mate, who has, perhaps, only just emerged from an unsatisfactory apprenticeship; or with the "slow coach," who, perhaps, with considerable difficulty, and your own generous assistance, can manage to get though nearly two-thirds as much work as yourself in the ten hours: or with that Boaster,—that pest of trade societies, whose prodigies of labour have never existed, save at the bar of the public-house? Do not these cases suggest to you that some one must be the loser; that either that class of workmen cannot be worth the wages, or that if so, you must be worth more: that it can matter but little to the employer if he makes the good pay for the bad? His interests are secure while you, my friends, are clamouring for the support of the idle, the worthless, and inefficient, to the prejudice of your own interests, and the expense of your own pockets. It is this, as well as the "Public-house" Trade Society system that has deluged the trade with hundreds who assume to be, but never will be, carpenters, but who pass on in the crowd by the interest of a friend. It is this system that has furnished us with foremen selected, not for superior intelligence or moral worth, but for their bullying and "sweating" capabilities; it is this system that deadens the energies and destroys the spirit of emulation in the younger ones, since it holds out no inducement to excel but the everlasting 5s. or 5s. 6d. per day, be he good, bad, or indifferent.

I would wish, Sir, to see a thorough organization throughout not only this branch of trade, but in all others, and more especially a complete annihilation of the hateful "Public-house Society" system. In our trade alone the amount thus daily, and almost hourly, uselessly squandered, would suffice in a year to erect a building worthy of the carpenters and joiners of the metropolis, where the business of the different societies might be carried on, and where those of its members out of employ might refresh their minds and increase their usefulness by means of a library of works on matters connected with the trade, and where the younger branches might, by lectures or classes, receive that theoretical acquaintance with their business rarely to be obtained elsewhere; where a perpetual register should be kept for workmen and employers, and where should be obtained, from a body of eminent and *thoroughly qualified practical men*, after the necessary examination, a certificate of the qualifications of its members, and upon which certificate alone *the rate of wages should be based*.

JOHN LANGSTAFFE.

COLUMN, AMMERDOWN-PARK, SOMERSETSHIRE.

In reply to some inquiries concerning the column which is being erected on the highlands of Ammerdown-park, in Somersetshire, in memory of the late T. S. Joliffe, esq. we are asked to state that intimation will be given when the work is sufficiently advanced to merit examination. The subjoined inscription, placed in a recess of the plinth, will in some degree explain the design and object of the structure.

Hæc Columna
Quâ conservetur memoria
T. S. JOLIFFE, Armigeri,
E Stirpe Regum Plantagenetarum;
Hujusce Centuriæ KILMERSDONLÆ nimirum,—
itidemque VELLOVLÆ.—Præsidis Dominique;
Viri
Ingenio, vi animæ, virtutum indole,
Et omnium artium
Quæ ad humanitatem pertinent disciplinâ
Præclari;
Qui
In cunctis vitæ rationibus,
Comis, excultus, integer;
In Senatu—in Tribunali—
Ubi quid fortiter ac strenuè agendum esset,
Cùm muneribus fungendis,
Tùm potestate opulenti possessoris exercendâ,
Sibi et amorem et observantiam
Latæ intelligentisque vicinitatis conciliavit,—
POSITA EST.
ILLI,
Qui agros circumjacentes
Ab aspera et dura conditione ad bonas fruges perduxit,
Qui viriditatem herbescentem ex semine elicuit,
Et terram indomitam fertilitate læta vestivit,
Qui denique "*Vicina coegit*
Ut quamvis avido parerent arva Colono;—
Filius ejus, natu major,—et hæres,—
Hoc—grati animi ergo—monimentum
Dat, dicat, dedicat!

AMMERDONIÆ
In nemore domestico,—prope Bathonienses,
In agro Somersetensi.
VIII. Id. Jun. A.D. CIↃIↃCCCLIII.

THE FEJÉRVÁRY COLLECTION OF ANTIQUITIES.

The collection of antiquities now exhibited in the rooms of the Archæological Institute, Suffolk-street, was made by a Hungarian gentleman, Mr. Gabriel Fejérváry, and presents a completeness very rarely met with in the museum of a private individual.

The chief treasures of this collection are its *gems*, its *bronzes*, and its *ivories*.

Amongst the gems, we find Assyrian, Babylonian, and Persian cylinders and seals; several first-rate Greek cameos, and some excellent intaglios. Dioscorides, Allion or Allionos, and Alexa, are the names recorded on some Greek gems. Dioscorides, renowned in the beginning of the Roman empire, marked his name on the full-face representation of a Muse (No. 179), admirable by the expression of naïveté; Allion on that of a triumphant Cupid (No. 187); and Alexa on a cameo (No. 189), representing a sea-dragon.

The Roman gems, though not rivalling the Greek gems in the charm of features or the grace of movement, are superior in the representation of individuality. The Onyx-cameo, with the head of Emperor Trajan (No. 316), in this collection, is thought by some to be one of the best portraits ever made.

The collection of bronzes begins with an Egyptian Pharaoh (No. 1), and contains specimens from the eighteenth dynasty down to the Egyptian style of the Ptolemaic and Roman period. Amongst the Etruscan bronzes, which show the beginning, the progress, and the decline of that art in a very striking manner, there is a figure of Turan or Venus (No. 93). The Greek bronze representing a male and female figure on horseback (No. 211) is one of the oldest Greek bronzes known, and connects the Greek art both with that of Egypt and that of Assyria and Etruria. We get nearer to the time of the first Athenian school by the representation of a Medusa (No. 212), and meet it in the Oinohoe (No. 213) brought from Greece by the Venetian Admiral Grimani.

The most valuable Roman bronzes are a statue of Emperor Hadrian (No. 582); two signs of an antique Zodiac (No. 580), of the time of Emperor Trajan; the figure of Cybele (No. 583); an excellent Æsculapius (No. 553); Mercury (No. 546), &c. Among the specimens of mediæval bronzes—four in number—are, a figure by Peter Vischer (No. 445), the contemporary of Durer; a relief by Verocchio (No. 442), the master of Leonardo Da Vinci; and a Virgin (No. 440), with the child, of the time of the Pisanis, besides an embossed shield with the date of 1552, and the name of Georg. Signann Aurifex Augustanus.

The series of ivories begins with one of a remote Etruscan date, and is very interesting and valuable.

Mr. Pulszky has given six of his course of lectures on Antiquities; the seventh will be given on the 2nd July, and will treat of Gems, Terra Cottas, Vases, and Ivories.

THE INSTITUTE OF ARCHITECTS.

Now that this session is over, allow me to mention what no doubt many will think with me calls for improvement,—I refer to the manner in which the members are obliged to cramp and screw themselves about to sit down during, at times, a tedious evening. It is really not creditable in the case of a society allied with Royalty to have such a meeting-room, and so furnished. A number of cane-bottom bed-room chairs are tied close together by their legs, and kept in rank and file with pieces of wood running just underneath the seats, so that it is impossible to move the one without the whole; and these are so close together, that there is but just room enough for each person's hips; but according to nature the shoulders are much broader than the hips, and it is quite amusing to watch these poor shoulders, belonging to individual architects, diving and driving into all manner of shapes for ease, never giving a thought that their neighbour might have some feeling in his back. And as to room for legs, God bless the man with long ones, say I, especially when he is so *fortunate* as to get the middle seat of a line. Even the lectures at times are not so interesting as to make you forget your situation. Pray do, Mr. Editor, raise your voice for the comfort of those who attend the meetings; and no doubt there are many who stay away rather than undergo the two hours' martyrdom. Release the chairs by cutting the string that binds them by the legs, and let them take up a position in a room where they would seem more at home—I mean the bed-room—and have proper stuffed forms with backs. Look at the Society of Arts, and above all, the Institute of Civil Engineers: it is a pleasure to go there even if the discourse should be worse than at Grosvenor-street, for you *can* sit comfortably. If I hear right, Mr. Editor, you have long legs yourself, and if you have happened to sit behind, you will not refrain from putting this before the council.

A VISITOR.

*** More commodious premises are very much needed by the Institute, and the council are fully alive to the fact. They have now several sites before them, but are of course anxious, when they *do* move, to get unexceptionable quarters, so as to render another change unnecessary. It would not be too much to expect that Government should provide a fitting meeting-place for the Institute.

THE CRYSTAL PALACE.—In consequence of an accident to some scaffolding at the building (which, we are told, was happily attended with no injury to life or limb), the raising of the first rib of the central transept, mentioned last week, will be postponed for a time.

IRISH CORRESPONDENCE.

THE foundation-stone of a new Wesleyan church has been laid at the Falls-road, opposite Alexander's flour-mills, at the western end of Ardmoulin-place, Belfast. Mr. Lanyon is the architect; and the contract has been given to Mr. James Carlisle.

On the Killarney Junction line the works have been brought nearly to a completion,—29 miles from Mallow to Freemount have been opened for traffic, and the 8 miles next Killarney are ready. The only unfinished works of any importance are the rock cutting (at which 300 men are engaged night and day) and the Quagmire viaduct. The stations are (we are informed) nearly completed, and the large hotel at Killarney, which was noticed in the *Builder* some time since, is in progress. Mr. W. R. Lefanu, C.E. Mr. Dargan, contractor.

A Presbyterian church has just been built at Waringstown; and a schoolhouse for males and females, with suitable apartments for teachers, has been lately added.

The subscription-list for the proposed masonic hall at Armagh is daily increasing.

A new town-hall (with mechanics' institute, reading-room, and library) is proposed to be built at Cavan.

A new Wesleyan methodist chapel has been commenced at Coleraine, and the foundation-stone has been laid in presence of a large assemblage, and with the usual formalities, by John Cromie, Esq. D.L., J.P.

We are told that the contract for building a new club-house at Queenstown, Cork, has been disposed of to Mr. Cassidy, and that the works are progressing.

HAND-WROUGHT IRON GATE IN THE TOWN HALL OF LUNEBURGH, HANOVER.

IN presenting this well-designed and freely-executed design in wrought-iron, it may not be out of place to string together a few random notes respecting the ancient and useful art by which it was produced. We will not at present enter into a planned and regular history of working in iron, and yet cannot well refrain from commencing these remarks at a remote period.

It is noticed that but few specimens of iron-work are met with amongst the remains of the ancient Egyptians; this circumstance, however, has by some been ascribed to the nitrous nature of the soil having caused the more rapid decay of iron than of other metals. In the sacred writings the uses and manufactures are mentioned in numerous passages.

Tubal Cain is the *first-mentioned* smith or forger of every instrument of iron (Gen. 4, xxii.). From that time we meet with manufactures in iron of the utmost variety (*some* articles of which seem to be anticipations of what are commonly supposed to be modern inventions; as iron weapons or instruments (Numb. xxxv. 16, "If he smite him with an instrument of *iron*, so that he die, he is a murderer;" also Job xx. 24); *an iron bedstead* (Deut. iii. 11, "For only Og king of Bashan remained of the race of giants; his *bedstead of iron* is shown, which is in Rabbath of the children of Ammon, being 9 cubits long and 4 broad, after the measure of a man's hand"); chariots of iron (Josh. xvii. 16, and elsewhere); iron weights—shekels (1 Sam. xvii. 7); harrows of iron (2 Sam. xii. 31); iron armour (2 Sam. xxiii. 7); tools (1 Kings vi. 7; 2 Kings vi. 5); horns (1 Kings xxii. 11); nails, hinges (1 Chron. xxii. 3); fetters (Ps. cv. 18); bars (Ps. cvii. 16); iron bars used in the fortifying the gates of towns (Ps. cvii. 16; Isa. xlv. 2); *a pen of iron* (Job xix. 24; a pillar (Jer. i. 18); yokes (Jer. xxviii. 13); pan (Ezek. iv. 3); trees bound with iron (Dan. iv. 15); gods of iron (Dan. v. 4); thrashing instruments (Amos i. 3); and in later times an iron gate (Acts xii. 10); the actual cautery (1 Tim. iv. 2); breast-plates (Rev. ix. 9).

The art of the smith is one of the essentials of civilization, and so requisite was the trade of a smith in ancient warfare, that the conquerors removed these artisans from a vanquished nation in order the more effectually to disable it. Thus the Philistines deprived the Hebrews of their smiths (1 Sam. xiii. 19); and other passages of the sacred and other ancient writings might be mentioned to show the great estimation in which the craft of a smith was held in remote times.

Iron was prepared in abundance by David for the building of the temple (1 Chron. xxii. 3): in 1 Chron. xxix. 7, he says, and they gave for the works of the house of the Lord, of gold, 5,000 talents, and 10,000 solid silver, 10,000 talents, and of brass 18,000 talents, and of iron 100,000 talents;—an enormous quantity, whichever opinion be right as to the weight of the talent.

While glancing at these notes of ancient iron-workers, who must have been numerous at the far-famed Temple of Solomon, it may not be uninstructive to mention the qualifications considered necessary for one of the directors of that great work, a list of which he gives in his embassy to the King of Tyre, as follows:—"Send me, therefore," says he, "a skilful man, that knoweth how to work in gold and in silver, and in brass, and in iron, and in purple, in scarlet and in blue, and that hath skill in engraving, with the artificers which I have with me in Judea and Jerusalem whom David, my father, provided."

The King of Tyre, on the receipt of Solomon's message, and after congratulating the latter on his appointment to build so glorious a work as the temple, says, "I therefore have sent thee, my father, Hiram, a wise and most skilful man, the son of a woman of the daughters of Dan, whose father was a Tyrian, who knoweth how to work in gold, in silver, in brass, and in iron, and in marble, and in timber, in purple also, and violet, and silk, and scarlet, and who knoweth to grave all sorts of graving, and to devise ingeniously all that may be need of in works of thy artificers; and with the artificers of my lord David, thy father."

For ages even before the dawn of British civilization, this country has been famous for its large production, not only of iron, but the other materials requisite for its manufacture. We will not endeavour to penetrate the gloomy mist of old traditions which bring people of various and now extinct nations to our shores in search of this valued mineral: the traces, however, of the Roman workmen are distinctly visible at the present day in the Forest of Dean, in Gloucestershire, and many other parts of England. It is but reasonable to suppose that the then barbarous natives of these islands should by the teaching of the strangers speedily acquire skill and knowledge in the uses and appliances of iron, and we accordingly find, as early as the twelfth century, iron-work for both domestic and warlike purposes was extensively manufactured in England. The Anglo-Saxons had previously been noted for their work in silver and other metals.

Stowe says, "I find a complaint about the year 1300, of the *Ferones* (that is, of such as dealt in iron), made to Elia Russel, Maior, and the Aldermen, for that the *Smiths of the Wealds*, and other merchants, bringing down irons for wheels for carts to the city of London; they were much shorter than antiently was accustomed,—to the great loss and scandal of the whole trade of ironmongers, and requiring remedy upon this; whereupon an inquisition was made of lawful and honest men, who presented these iron-rods of the just and antiently-used length of the *Styrtes*, and also of the length and breadth of the *Gropes* belonging to the wheels of the carts; which rods were sealed with the seal of the chamber of Guildhall, London, whereof one remains in the said chamber, and another rod was delivered on the Monday before the Purification of the Virgin Mary, A.D. 29, Ed. I. to *John Dode and Robert de Padington*, Ironmongers to the Market; and the third was delivered the same Monday to *John de Wymondham*, Ironmonger to the Bridge, all of which, from day to day, warned all merchants bringing those iron-works to the City of London, as well from the *Wealds* as elsewhere, that they should not henceforward bring such irons, unless of the length and breadth aforesaid, upon forfeiture of the said iron-works that should be found against the assize aforesaid."

The above passage is curious in showing at that period the extensive use of agents in London for the sale of manufactures. Various craftsmen in iron, &c. however soon after settled in London, and became famous for the excellence of their goods.

It is difficult to fix the date of the formation of the various workers in metals into substantial companies, but the time of their incorporation, and other interesting particulars may be gathered from Stowe and other London historians.

The Society or Company of Armourers have been a brotherhood of ancient date, and became incorporated in the beginning of the reign of Henry VI. the king being pleased to style himself a brother of the company.

"The Cutlers' Company," says Stowe, "is of great antiquity, and was first incorporated in the beginning of the reign of Henry V. The importance of this company is shown by the confirmation of the charter by Henry VI. Henry VIII. King Philip and Queen Mary, Queen Elizabeth, and King James.

"Knives for hundreds of years (past all memory) were made in this kingdom,—but coarse and uncomely. But in James the 1st, his time, the best and finest knives in the world were made in London. Richard Matthew, at Fleet-bridge, was the first Englishman that attained the skill of making fine knives and knife-hafts, and, 5 Elizabeth, he obtained a prohibition against all strangers and others from bringing any knives into England from beyond the seas, which until that time were brought in by ship-loads from Flanders and other places."

Of other workers in iron the Fletchers and those engaged in the various portions of the manufacture of the old English bows and arrows were in time superseded by the introduction of more deadly weapons.

In 1570 they style themselves the "Decayed Company of Bowyers, Flitchers, Stainyers, and Arrow-head Makers, as well of the City of London as elsewhere," and petition the Queen concerning their decayed condition; the exertions of the government of that time, although anxious to afford relief, failed in their intention.

The Company of Smiths or Blacksmiths was not incorporated until the twentieth year of the reign of Queen Elizabeth.

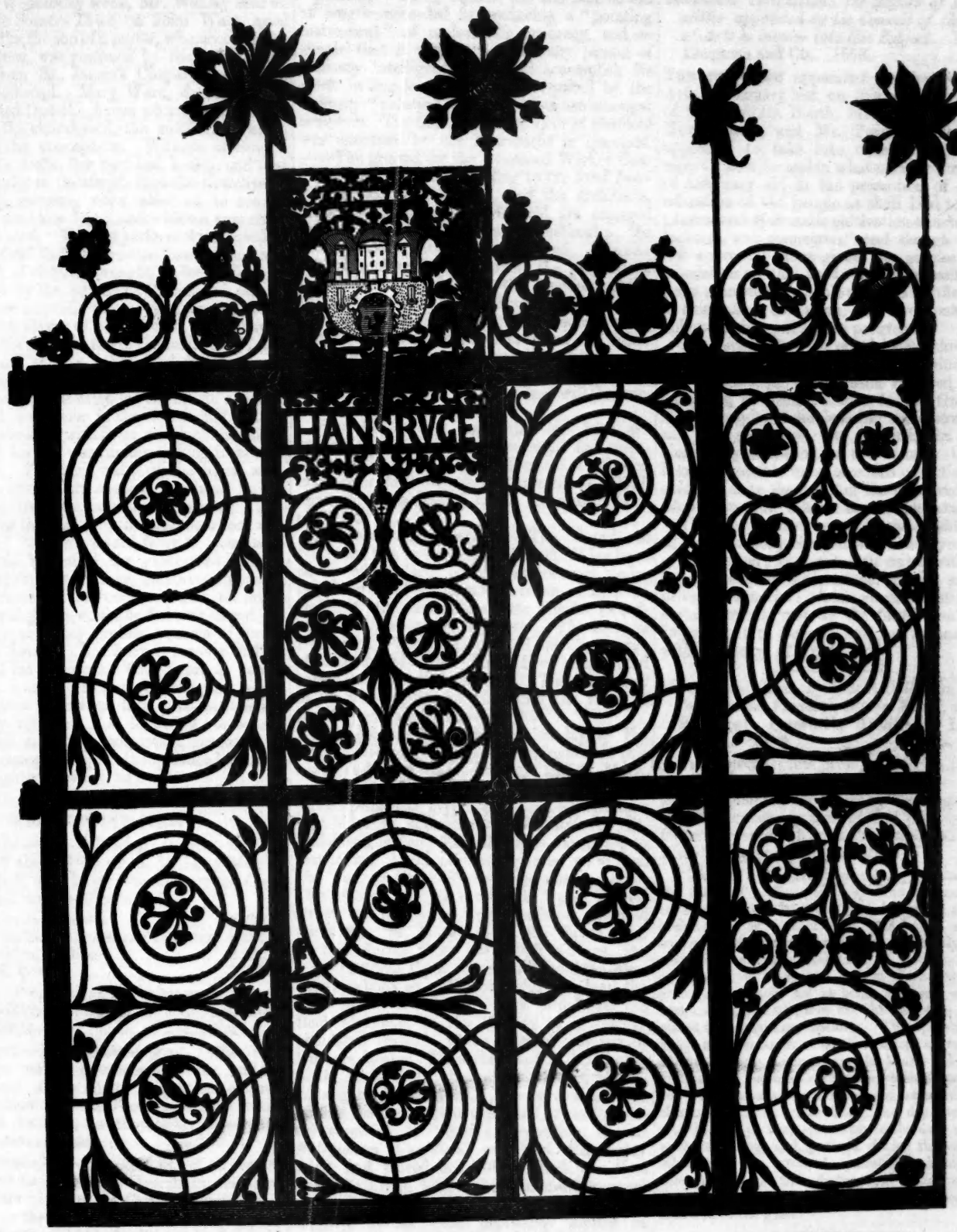
The pewterers were, in the olden time, an important body, and so excellent was their alloy of metal that it was sent from London in a manufactured state and otherwise to many parts abroad; but amongst all these crafts the ironsmith and goldsmith were distinguished, and in many instances these arts were practised together.

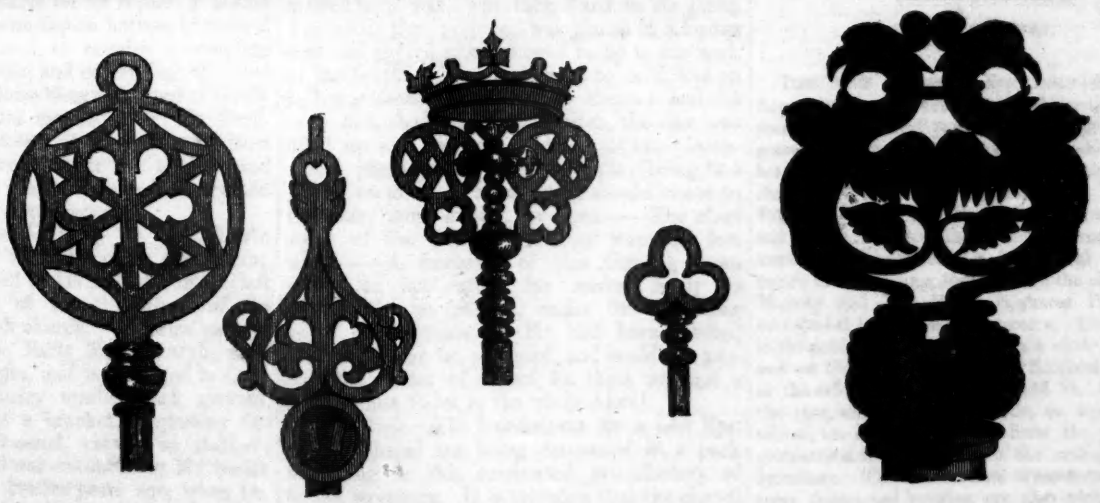
The trade of a goldsmith in Edinburgh appears classed with that of the hammermen or common smiths. In the charter of that corporation, granted 2nd May, 1483, the goldsmiths are included, and the whole received certain regulations and immunities by which they were enabled to appear as a public company. At what time the goldsmiths were separated from the hammermen is uncertain. Their first charter of incorporation is probably that granted by the town council, August 20, 1581, in which they received many privileges, amounting in the fullest manner to a monopoly of their trade. This combination of art so essential, not only to the decoration of a court, but other purposes, was confirmed in its rights by a charter from James VI. 1586, the same year that the benevolent and famous jeweller, George Heriot, commenced business.

The style of working in iron for architectural purposes has naturally become assimilated with the taste and order of the prevailing buildings, and one of the great uses of a national museum in this country ought to be the facility of examining these varied works of art,—for undoubtedly the art of working fine designs in iron is an art of a very high description, and an inspection of the few works at present remaining in England still appended to the best of the architecture of the Middle Ages shows a delicacy and refinement which only could have been produced by an educated and artistic eye and skilful hand. It is, however, the fact, that few portions of old architectural decoration have suffered more severely than the ironwork, and considering the beauty of the few existing examples, this loss is to be deplored.

The iron keys engraved are of French manufacture, and date from about the time of Henry VII. to the reign of Elizabeth.

WROUGHT-IRON GATE, LUNEBURGH TOWN-HALL.





WROUGHT-IRON GATE, LUNEBURGH TOWN-HALL.

"THE GRAVE-YARD FEVER."

ST. JAMES'S CHURCHYARD, HAMPSTEAD-ROAD.

Last Wednesday week, Mr. Wakley held an inquest in Somers Town, on John Ware, aged two months, the son of a porter, who, according to the evidence, was poisoned by the putrid exhalations from St. James's Chapel Churchyard, Hampstead-road. Mary Ware, deceased's mother, stated that the house where she lived was close to the churchyard, the smell from which poisoned the atmosphere. Witness attributed deceased's death, her own bad health, and that of her family to the stench from the churchyard. Mr. Day, surgeon, when called on to see deceased, found him dying, and within a very short period he died. Witness performed the autopsy, which proved that death arose from exhaustion, the result of debility brought on by the foul air generated by the adjoining churchyard, where, under three acres, lie thousands of human bodies in different stages of putrefaction, and many of them within a few inches of the surface. Hence typhus, and various other fatal diseases, constantly raged throughout the neighbourhood. A short time since he attended the beadle's family, who lived in a house in the churchyard. They were all attacked with fever, of which the father died, and his son was rapidly sinking from consumption. The very walls of the house were covered with a black coating, produced by the exudations from the surrounding graves. The disease that then afflicted the neighbourhood was designated "the grave-yard fever." Coroner: "It should be called the grave-yard feeder." After some further evidence, the coroner summed up, and expressed a strong hope that all intramural burial-places would be for ever closed, as they were so many prolific sources of every species of disease. The learned coroner further expressed his conviction that a proper representation upon the subject by the jury would meet prompt attention from the authorities. The jury returned the following verdict:—"Deceased died from exhaustion, produced by disease consequent upon the poisoned state of the atmosphere in which he lived."

PROVINCIAL NEWS.

Colchester.—The following tenders for the erection of the new church in St. Mary Magdalene's parish, were lately examined by the Committee, and the lowest accepted:—

Mr. Balderston, Ipswich	£2,298
Messrs. Lufkin and Shepherd, Colchester	2,286
Mr. Saunders, Dedham	2,220
Mr. Luff, Ipswich	1,925

Aston.—Preparations are being made, according to the *Herts Mercury*, for the construction of a bridge over the river Beane, at Aston Ford.

Woolwich.—Mr. Edmund Smith, the contractor for various government works, and for the defences of the Isle of Wight, has entered into a contract with the Woolwich Local Board of Health, we hear, to thoroughly sewer the town for about 8,000*l.*

Bridgewater.—From a report of a vestry meeting as to St. Mary's Church, in the local *Times*, it appears that Mr. Carver, architect, has reported on the state of the tower and spire, and the means advisable for its repair. It is said to be rent almost from top to bottom in several places, and, if retained, to require a complete system of iron-bracing and cementing, the cost of which is said to have been estimated at nearly the same as the sum estimated by Mr. Brakspear for its re-erection. A committee has been appointed to further consider the subject and report thereon, and also as to a new vestry and other contemplated improvements.

Sheffield.—A marble bust, by Mr. Edwin Smith, sculptor, of the late vicar, Dr. Sutton, has just been erected to his memory, in the left hand compartment of the "sedilia" of the chancel of the parish church. It forms part of a monument in the Early English style, measuring 8 feet in height, and is executed in Caen stone, with a statuary marble back ground, from which projects a bracket, supporting the bust, which is life-sized, carved in statuary marble. The model was executed by Mr. Smith from sittings some twelve years ago, when Dr. Sutton was in comparative health and vigour. Mr. Smith informs us that for some time past he has been occupied in devising an instrument for the use of sculptors for the purpose of "pointing" busts, figures, &c. and that he has at length succeeded in producing a "pointing instrument" of undeviating accuracy, and so simple that it may be used by any person of ordinary intelligence, and will accomplish its work in one fourth the time required by the ordinary "pointing instrument" in use amongst sculptors. The bust of the late vicar of Sheffield was executed by the instrument in question. ——The ground for the proposed Wicker Congregational Church, according to the local *Independent*, has been secured, and the architects, Messrs. Weightman and Hadfield, are engaged in working out the plans and estimates, the general design having been approved. The site is a triangular piece of ground, the property of the Duke of Norfolk, at the junction of the Burngreave and Grimesthorpe roads. The chapel is proposed to seat 1,000 persons, having also school-rooms, with class-rooms and other conveniences. The style is ecclesiastical, but adapted to congregational worship. It will consist of nave and transept, and will be surmounted by a tower.

East Retford.—A committee has been appointed to consider as to the repair and restoration of the parish church. The cost of intended improvements is estimated at upwards of 2,000*l.* upwards of one-half of which has already been promised.

Nailstone (Leicestershire).—The church of Nailstone was re-opened on 9th ult. It has been partly rebuilt, and completely restored, under the direction of Mr. Ewan Christian, of London, architect; the contractors being Messrs. Broadbent and Hawley, of Leicester. The style is Decorated. The sittings are all open, and made of stained pine-wood. Earl Howe contributed considerably more than 1,000*l.* The whole cost of the restorations, &c. including the value of the old materials, is about 1,700*l.*

Nottingham.—The ceremony of laying the foundation-stone of two new churches in this town, dedicated to St. Matthew and St. Mark, took place on Wednesday in last week. Towards carrying out the object more than 8,000*l.* have been already subscribed. The style of St. Matthew's is Early English; it is calculated to seat about 1,000 persons, greater part free. The cost of the edifice will be about 4,000*l.* This church will be erected in Upper Talbot-street, an increasing neighbourhood north of the town. St. Mark's is in the Tudor style. In this church there are 1,000 sittings, the major part free, if not, as well as those of the other edifice, wholly so. The cost will be about the same as St. Matthew's. It is situate on the Back Common, in the vicinity of a densely populated district, where a great number of Irish are located. The architect of St. Matthew's is Mr. H. Roberts; that of St. Mark's, Mr. R. Jalland, of Nottingham. The parchment containing the inscription deposited in the foundation-stone of St. Mark's, according to the *Nottingham Guardian*, was first thoroughly dried, and placed in a bottle, which was then raised to a high temperature, in order to expel as much atmospheric air as possible. The stopper, having been previously dipped in melted bees'-wax, was then fixed in its place. The bottle thus prepared was placed in a leaden case and melted pitch poured in up to the neck of the bottle. It was allowed to cool, and on it being ascertained that the stopper had not been disturbed by the hot pitch, the case was filled up and securely soldered down. Documents preserved on this principle (being in a partial vacuum), if no accident should occur to the case, must endure for ages.——The chief stone of the Artizans' Library was laid last week.——A mechanic of this thriving town made an application for advice lately to one of the magistrates, under the following novel circumstances:—He had been ejected from the house he occupied, and could not procure the shelter of a roof, for there was not a single house to let in the whole town.

Galashiels.—The foundations for a new Episcopal Chapel are being excavated in a park belonging to this celebrated manufactory of tartan wrappers. It is intended that the chapel shall be larger than that at Melrose, and be more ecclesiastical in its character.

Notices of Books.

Industrial Instruction: the Report of the Committee appointed by the Council of the Society of Arts to inquire into this Subject. London: Longman and Co. 1853.

The committee appointed by the Society of Arts, in January last, on this subject, consisted of the Rev. Dr. Booth, Mr. John Bell, Mr. Le Neve Foster, and Mr. Twining. They were appointed to take into consideration and to report "how far and in what manner the Society of Arts may aid in the promotion of such an education of the people as shall lead to a more general and systematic cultivation of arts, manufactures, and commerce," and though they do not appear to have given any precise recommendation on that head, they have collected a large number of valuable opinions on the subject of elementary education, and have published a volume which will aid its progress.

The deplorable want of education throughout the country is made evident in various ways. The educational qualification required for the admission of seamen's sons to the Greenwich Royal Hospital Schools is the same now that it *was fifty years ago*; but so low is the state of elementary education in the country, that it is found impossible to enforce this condition. The evidence as to the result of the improved system adopted in these schools is very encouraging.

The principal step urged is the establishment of a central body charged with the improvement of instruction; to admit into union with it colleges, mechanics' institutions, schools, and even private seminaries; which requirement is, to a certain extent, met by the foundation of the Department of Science and Art in connection with the Board of Trade.

Notes on the Causes of Fires in Buildings, arising from Grates, Furnaces, Stoves, Water, and Gas. By Wyatt Papworth, Architect. London: Layton. 1853.

The object of this little pamphlet is to direct attention to the weak points in the various methods adopted for warming buildings, and it is well calculated to answer that purpose. The following paragraph from the chapter on "Open Fires" may be usefully quoted:—

"The bad setting of grates is alone, very frequently, the cause of serious damage. The original grates consisted merely of what may be called a box or basket with or without hobs, and, when set, were enclosed with brickwork which was frequently covered with plain or ornamental tiles, so that no accident could very well happen; but in these days, when grates are already *set* by being enclosed with iron backs, sides, and top, they are but too often clumsily placed in the chimney opening. This operation often leaves a space, larger or smaller, according to the size of the opening, between the back and sides of the grate and of the brickwork, into which the soot falls, and from the want of some means of access, it is never cleaned out. The grate being one day overheated, sets the soot on fire, spreading to the dado or woodwork adjoining, and, perhaps during the night, the inhabitants are aroused, sometimes hardly soon enough to escape from destruction. The security of the setting should be carefully provided during the insertion of the grate."

Miscellanea.

The New Hall in Buckingham Palace.—According to the newspapers, the ceiling has been painted in oil, and panelled with a great variety of geometrical forms, and adorned with shields of arms, heraldic badges, the insignia of the national orders of chivalry of the Three Kingdoms, the badge of the Prince of Wales, and the monogram of the Queen and Prince, with wreaths of flowers and the various mottoes interspersed. A large oval occupies the centre of the ceiling, in which are the shields of Her Majesty and His Royal Highness Prince Albert, surrounded by a wreath of flowers. On the one side is the golden harp of Ireland in a circle of deep blue, and on the other the lion of Scotland. The stars of the orders of the Garters and St. Andrew, with the rose, shamrock, and thistle, on squares of vermilion, are arranged so as to form the points of the geometrical forms into which the ceiling is panelled by colour. The architectural ornaments of the architrave, frieze, and cornice, are also picked out with vermilion and white, blue, gold and white, and green and white.

THE IRON TRADE.—New complications are being introduced into this trade in consequence of the determined stand for increased wages even in the midst of falling prices. The great strike at the Llynfi iron-works in Wales still continues, and there is no prospect of an amicable adjustment. Vast numbers are leaving the place in order to seek employment elsewhere; and soon it is expected that the whole body, numbering 3,000, with their families, will have left. In face of the feeling displayed in this strike, some of the iron-masters have promised an increase of wages,—especially, we observe, Lady Charlotte Guest. We have no doubt that wages might be increased even with falling prices, when we consider that the rapid strides recently made upwards with prices were by no means co-ordinately accompanied, to the full extent, at least, by equivalent rises of wages. The demand for a rise at present, however, will certainly tend to sustain prices, whatever ultimate damage that may do to the best interests of the trade, which would have been in a far more flourishing condition just now than it has ever been since the great railway mania, were it not that the foreign demand for iron was so seriously checked by the reckless and uncalled-for rise in prices. The preliminary meeting was to be held to-day (Thursday), and no doubt strenuous exertions have been used to prevent a fall, in nominal price at least, though already preceded by a *bonâ fide* fall in actual trade transactions. There is a talk of blowing out furnaces too, as a break to the anticipated fall.——Mr. Blackwell, an ironmaster of Dudley, has stated that the make of iron in that district had risen from 600,000 tons per annum in 1825, to 7,000,000 in 1852.——The *Mining Journal* contains the following statistics as to steel:—In Sheffield there are sixty-two establishments, with fifty-six furnaces, for converting iron into steel, and seventy-four steam-engines, with 1,353 horse power. Three sorts of steel are manufactured—blistered, shear, and cast. Last year the quantity of such "unwrought," steel sent from Sheffield to Liverpool for shipment, chiefly to the United States, but also to the Mediterranean and East Indies, amounted to 80,000 bundles of 1¼ cwt. and 22,000 long narrow cases, averaging 5 cwt. each, being altogether 10,500 tons in weight, and 425,000*l.* in value. Besides these, 4,000 casks of files, weighing 2,000 tons, worth 230,000*l.* were forwarded from Sheffield, through Liverpool, principally for shipment. The manufacture of steel in Sheffield is now said to be 2,000 tons monthly, with every prospect of an increase of 25 per cent.: the bulk is for exportation through Liverpool.

THE PROPOSED PARK FOR FINSBURY.—On Tuesday night a very crowded meeting of the inhabitants of Finsbury was held in Sadler's Wells Theatre, to consider the best means of securing the proposed Albert Park. Lord Robert Grosvenor, who occupied the chair, said he much regretted their repeated disappointments. Three successive administrations had acquiesced in the project, but all had gone out of office ere it could be realized. The present Government also admitted the necessity for the proposed park, but had not promised to do anything to it yet. Mr. Duncombe moved the first resolution, deprecating the delay, and suggested that the chairman should propose, in the House of Commons, an address to the Queen, praying that her Majesty would direct her ministers to form a park for the benefit of her liege subjects of the borough of Finsbury and the City. Mr. Woodward, F.R.S. seconded the resolution, which was then carried without a dissentient voice. The Lord Mayor moved the next resolution, which affirmed the great importance of at once carrying out their object. There ought, he said, to be as little further delay as possible; for what would now cost 200,000*l.* would next year cost perhaps 400,000*l.* The resolution was also unanimously carried. The chair was then taken by Mr. Woodward, the chairman requiring to attend the baptism of the young Prince Leopold, and some further business having been disposed of, the meeting separated.

THE SCHOOL OF ART FOR WOLVERHAMPTON.—The foundation-stone of the Wolverhampton and South Staffordshire School of Practical Art was laid on Tuesday, in last week, by Lord Hatherton. Upwards of 300 ladies and gentlemen afterwards partook of luncheon, at the Exchange, under the presidency of the Mayor. Amongst those who took part in the proceedings were Lord Hatherton, Lord Lewisham, Sir Robert Peel (who gave a donation of 50*l.*), Dr. Playfair, Mr. Thornely, M.P. the Rev. J. B. Owen, and Mr. George Dawson. Dr. Playfair, as secretary for science in the Department of Practical Art, dwelt upon the importance of extending the plans of the school, so as to include science as well as art. The building, which is to be "classical" in its elevation, will be erected in Darlington-street.

STAMPED LETTER PAPER.—A correspondent, under the signature "Themistius," urges that stamped postage letter paper should be issued, and gives some valid reasons in support of the proposition.

METROPOLITAN ASSOCIATION FOR IMPROVING DWELLINGS OF INDUSTRIOUS CLASSES.—The annual general meeting of this society was held on Thursday in last week, at the London Tavern, Sir Ralph Howard, bart. M.P. in the chair, supported by Lord Robert Grosvenor, M.P. Viscount Ebrington, M.P. Admiral Lord Radstock, W. A. Wilkinson, esq. M.P. Dr. Southwood Smith, &c. The ninth report stated, in reference to the piece of land in Nelson-street (formerly Guy-street), Southwark, that a plan has been prepared for accommodation, for 108 families, in twelve sets of four rooms, sixty-six sets of three rooms, and thirty sets of two rooms, with scullery to each; and that tenders for the erection of this building were sent in by thirteen contractors, from which, in consequence, it was presumed, of the present high price of building materials and labour, the directors calculated that these dwellings would cost 215*l.* a set, exclusive of land, while similar dwellings in the Old Pancras-road and Albert-street cost 160*l.* a set; making a difference on the 108 sets of 5,940*l.* They, therefore, recommended that the new dwellings be deferred. The report went on to state, that the total cost of the society's dwellings for families was 33,155*l.* 2s. and the receipts 1,596*l.* 2s. 2d. showing a net per-centage of nearly 5*l.* The superintendent of the Soho Chambers had left, with about forty of the tenants, and gone into an establishment opened by him, but since relinquished. Various improvements had since been made in these chambers. The chairman, in moving that the report be adopted, expressed his regret that the directors were enabled to declare a dividend of only 1½ per cent. But they had now a larger capital on which to declare a dividend. They had not expended that capital in building, therefore it had been almost unproductive. Many rooms in Albert-street, Spitalfields, were still unlet, only 140 rooms out of 230 being let; and in the Soho Chambers several rooms were not let, principally owing to the inferior description of the apartments. They could not, however, account for the Albert-street rooms not being all let, and assuredly that circumstance had thrown the directors out in their calculations. He understood that if they were let, the sum they now had, and a small sum in addition, it would make a difference in respect to the accommodation for families of 1 per cent. and so also in the case of houses for single men another 1 per cent. which would thus bring the interest up to 4 per cent. supposing they had a capital of 100,000*l.* In the society in which the Earl of Shaftesbury took a deep interest, it appeared that in one house they cleared 12 per cent. but that fact was owing to its being a single house. Dr. Southwood Smith said this association would not achieve its object until it made a return of 5 per cent. on the capital embarked; though he was far from being of opinion that the money success was the only consideration with the society. The object of the institution was to show the great moral and physical influence of the house upon the individual; and the exertions of this association completely established the point in respect to the rate of mortality in their several establishments.

PLYMOUTH MARKET COMPETITION.—Fifteen designs were received for the re-arrangement of the Market-place, and the committee have awarded the first premium of one hundred guineas to the design furnished by Mr. Christopher Eales, architect, of London, and the second premium of twenty-five guineas to Mr. R. B. Grantham, of London. Many of the designs presented architectural elevations of considerable merit, but the principal object of the competition, we are told, was to secure good arrangements in preference to architects' effect. A correspondent says, none of the local architects supplied drawings (with the exception of one from Devonport), and the only reason that can be assigned for their absence may be attributed to a clause in the conditions which prevented the successful architect from claiming the superintendence of the work—a course injurious to the architect and prejudicial to the profession.

BRITISH ARCHÆOLOGICAL ASSOCIATION AND LONDON.—The British Archæological Association propose to make a third visit to the City Antiquities on Thursday, the 7th inst. The order of proceedings will be to assemble at Crosby Hall, Bishopsgate-street, at half-past one o'clock, where the Rev. Mr. Hugo will read a paper on the Hall, its history, architecture, &c. Thence the association will proceed to inspect the churches of St. Helen's, St. Andrew Undershaft, and St. Botolph, Bishopsgate-street, on which some observations will be offered.

WHERE SHALL WE GO?—I would suggest the practicability of advertising by means of placards at the various railway stations, telegraph offices, and at other suitable places through London the state of the weather at the different towns of England and at the many haunts of excursionists: this, I am under the impression, would be a great public convenience, for we then should know when the weather here (London) was unfavourable, that we have only to go a few miles out or so, where perhaps a fine summer-day is charming its inhabitants. The expense incurred in the above by the several companies would be well refunded by the great increase of passengers in unpleasant weather; for could we but know that a dry spot and a clear sky availed us elsewhere, there are thousands who would gladly avail themselves of the opportunity of taking a little pleasure.—J. R.

METALLIC NAME AND NUMBER PLATES, LETTERS, &c. FOR STREETS OR HOUSES.—Mr. Thomas Motley has specified a patent for casting and forming in a cheap and ready manner tablets, letters, and figures, for indicating names, numbers, &c. He uses a frame of wood, with separate letter patterns, hollow and otherwise, to be set up in it like types, and forming moulds in sand or composition as described, to be run in with metal, so as to cast a tablet in which the letter will be either hollow or projecting.

THE SUBMARINE TELEGRAPHIC UNION BETWEEN BRITAIN AND BELGIUM.—The Duke de Brabant, the heir apparent of the throne of Belgium, has opened the telegraphic communication between Brussels and the British Parliament Houses, where Lord de Manley, the Duke of Hamilton, and various other noblemen and gentlemen, including Sir William Cubitt, Mr. Wollaston, some of the foreign ambassadors, &c. were in attendance, and transmitted the Duke of Cambridge's apologies for non-attendance. A question was put by Lord Howard de Walden in Brussels to his friend Lord Cadogan at Westminster, and replied to by the latter, all in thirty-eight seconds of time! What "lying wonder" of ancient magic or witchcraft was ever more astonishing—more apparently miraculous—than this real and true wonder of modern science?

CAB HORSES.—A correspondent says it would be a great boon to the feelings of every true Englishman if the cowardly way of flogging horses over the eyes was not allowed: nearly half the cab and omnibus horses are blind from this disgraceful system.

TENDERS

For the sewerage of the Askew estate, Hammersmith. Mr. A. C. Bean, architect:—

Eldred	£1,499 0 0
Lockwood	1,357 10 0
Emmins and Huxley	979 18 8
Chamberlen (accepted)	968 10 0

For pulling down a cottage and erecting a villa residence at Strand-on-the-Green, under the same architect:—

		Deduct for old Materials.
Chamberlen	£1,046	— £36
Hurst	1,006	— 30
Bray	968	— 30
Beaver (accepted)	862	— 50

For almshouses for the Clothworkers' Company, to be erected near Frog-lane, Islington. Mr. Samuel Angell, architect:—

Pritchard	£2,084
Hopkins and Roberts	1,985
Jay	1,945
Rowland and Evans	1,920
Hebb	1,595

TO CORRESPONDENTS.

"*Tiles.*"—"J. D." asks for "a recipe for burning tiles blue. The earth, after being burnt in its natural state, is a light red."

"T. B." (we are not in a position to offer an opinion) "J. R." "J. K." "Camp Hotel," "G. P." "Mr. P." "J. C." (thanks) "Mr. T." "R. H. P." "A." New Buildings (we cannot refer). "Rouse them," "Your Weekly Reader." "J. L." "H. C." "C. and G." "F. W." "X. L." (will see in "Buildings Act" the conditions under which a district-surveyor may so act), "F. R." "O. A." "L. B." "G. J. R." (the necessary details are not nice). "G. G. S."

NOTE.—"The Plea for the Revival of True Principles of Architecture in the Buildings of Oxford," given in our last, was published (by J. A. Parker) as a pamphlet, with illustrations, a few weeks ago.

"*Books and Addresses.*"—We have not time to point out books or find addresses.

NOTICE.—All communications respecting *advertisements* should be addressed to the "Publisher," and not to the "Editor:" all other communications should be addressed to the EDITOR, and not to the Publisher.

ADVERTISEMENTS.

NOTICE.—Whereas her Majesty's Solicitor-General, after hearing the matter this day, did allow a grant of LETTERS PATENT for the new invention of CHAPPUIS'S MYRIASTRATIC REFLECTOR, for the better diffusion of daylight: this is to give notice, that any parties infringing the said invention will be proceeded against under the Act 15 & 16 Vic. cap 83.—Dated this 8th day of June, 1853.

BARLOW and CO. Agents for the Patentee.

Office for Patents, 86, Chancery-lane.

TO STONE MERCHANTS AND PAVIORS.

THE Advertiser is willing to treat for a MOIETY or other PART of a good and old-established BUSINESS in LONDON.—Address, Z.O. Office of "The Builder," stating real name and locality.

PARTNERSHIP.—An Architect experienced in designing Public Buildings, and who is practising in London, desires to unite his practice and enter into PARTNERSHIP with an established practitioner who may require the aid of a competent and assiduous associate.—Address, CREDENDA 73, Farringdon-street, City.

TO SURVEYORS AND OTHERS.

THE Tunstall Commissioners are in want of a competent person to fill the several offices of SURVEYOR of HIGHWAYS of the township, COLLECTOR of RATES, INSPECTOR of MARKET, and NUISANCES. The party applying must be well acquainted with road making, surveying, and building; will have to devote his whole time to the several duties which will devolve upon him; and must be prepared to enter into a bond, with sufficient surety, duly to account for all moneys which may come into his hands. Persons desirous of applying for the above appointment must send in to me testimonials, with the amount of the salary they will require, under seal, endorsed, "Tender for Surveyor," on or before 1st day of AUGUST next. Any further information may be had on applying to

THOMAS LLEWELLYN, Clerk to the Commissioners.

Tunstall, Staffordshire, 23rd June, 1853.

ENGINEERING PUPIL.—The Town Surveyor of Bangor has a VACANCY for an ARTICLED PUPIL.—For further information address to The Town Surveyor, Bangor, North Wales.

THERE is a VACANCY for a PUPIL in the Offices of an Architect (in one of the first provincial cities), which offers unusual advantages to a well-educated Youth. Premium, 150l.—Address, T. H. M. Office of "The Builder," 1, York-street, Covent-garden.—June 21, 1853.

AN IN-DOOR APPRENTICE WANTED, to the HOUSE-DECORATING in general, where he will be treated as one of the family.—Address, Wm. BULLEY, Decorator and House Agent, Western Villas, Ealing, Middlesex.

AN ARCHITECT in London desires to receive a Young Gentleman as an ARTICLED PUPIL, either in or out of the house.—Letters addressed to W. T. care of Mr. Lloyd, 62, Chancery-lane, will be forwarded.

FOREMAN CARPENTER WANTED.

THE Melbourne and Colonial House Investment Company require the immediate services of an active and intelligent FOREMAN CARPENTER, accustomed to the construction of houses for export, and with a knowledge of drawing.—Application to be made by letter only, with references, at the Offices of the Company, 13, Gresham-street.

1st July, 1853. A. KINTREA, Managing Director.

WANTED, an experienced Man as CLERK and general SUPERINTENDENT of WORKS, conversant with drawing and measuring.—Apply, by letter, addressed W. S. Peele's Coffee-house, Fleet-street.

WANTED, a Man to WORK a SAW-BENCH. One that has been used to a timber-frame would be preferred.—Apply to J. WILLSON, Builder, 120, Great Suffolk-street, Southwark.

WANTED, by a Builder in the county of Middlesex, eight miles from London, a CLERK, who understands book-keeping, estimating, taking out quantities, and making working drawings.—Address, stating terms, where last engaged, to J. W. Builder, Post-office, Edmonton.

TO PAINTERS AND GLAZIERS.

WANTED, Twelve Miles from Town, an active, steady, respectable Man as PAINTER, GLAZIER, and GRAINER, who thoroughly understands his business; if satisfaction is given the situation would be permanent.—Apply to Mr. JOHNSON, Carpenter, &c. Surbiton Hill, near Kingston, Surrey.

MANCHESTER MARBLE WORKS.

WANTED, several experienced MARBLE MASONS.—Apply at 122, Piccadilly, Manchester.

WANTED, a respectable Man, that is capable of erecting Four-roomed Cottages, and Superintending the whole of the Building, from the foundation to the completion, keep the books, pay and receive money, measure and square work. To save trouble on both sides, none need apply who cannot deposit security for the men's wages passing through their hands.—Apply, by letter only, to Messrs. HARRIS and SHERLOVE, General Contractors, Long Ditton, Surrey.

WANTED, by a Builder in the Country, a CLERK, who thoroughly understands superintending and measuring up work, and is a good draughtsman. To a suitable person the situation would be permanent.—Address, stating terms and where last employed, to A. O. 71, Fleet-street, London.

TO PARENTS AND GUARDIANS.

WANTED, in a Builder's Office, a respectable and well-educated YOUTH. To save time, no premium required. No salary first six months. No Agents need apply.—Address "BUILDER," Post-office, Brick-lane, Spitalfields.

WANTED, an OUT-DOOR APPRENTICE to the CARPENTRY and JOINERY business, situate in the City.—Apply to Mr. C. GEARY, Farnley Iron Company's Wharf, Limehouse. A small premium required.

WANTED, two first-rate ARCHITECTURAL DRAUGHTSMEN.—Apply, with specimens of drawings and references, at No. 104, Southwark-bridge-road, between the hours of TEN and TWELVE, on MONDAY, the 4th July.

WANTED, an ARCHITECTURAL DRAUGHTSMAN, fully competent to get up working and other drawings.—Apply, by letter, stating age, terms, and last engagement, to Mr. COOPER, Stationer, &c. Union-street, Birmingham.

TO ARCHITECTS.

WANTED, a SITUATION as CLERK of the WORKS. The Advertiser is fully competent in the practical knowledge required in construction; also well acquainted with detail and other drawings. The necessary references given on application.—Address, A. B. Z. Post-office, Derby.

TO BUILDERS AND OTHERS.

WANTED, by a respectable Man, as FOREMAN, who well understands paper-hanging, glazing, painting, and the general business of the trade. The town preferred.—By letter, post-paid, G. FILDE, 17, Harrison-street, Gray's-inn-road.

TO BUILDERS AND CONTRACTORS.

WANTED, the CARPENTER and JOINER'S WORK of SEVERAL HOUSES, in town or country. No objection to a country job.—Address to DELTA, National Coffee-house, 7, Little Turnstile, Holborn.

TO CARPENTERS AND BUILDERS.

WANTED, to place a well-educated Youth as an IN-DOOR APPRENTICE. A premium will be given.—Address, stating particulars, Mr. GARDNER, Bookseller, Doggshall.

TO ARCHITECTS.

WANTED, an ENGAGEMENT by a Gentleman who has lately completed his articles. He has been accustomed to make fair and working drawings, and to attend to the general routine of office work. London preferred.—Address, J. C. Office of "The Builder," 1, York-street, Covent-garden.

TO BUILDERS.

WANTED, by a Practical Joiner, a SITUATION as SHOP or GENERAL FOREMAN. Unexceptionable References from the situation he is about to leave.—Address "G. H." 5, Princes-terrace, Hyde-park, London.

TO PLUMBERS AND BUILDERS.

WANTED, by a Young Man, a SITUATION as PLUMBER; competent in all its branches, also in the fixing of baths. Satisfactory reference can be given as to ability. No objection to fill up his time in painting or glazing. No objection to the country.—Address to Mr. BRITTON, No. 20, Caroline-street, Arlington-street, Camden-town.

TO ARCHITECTS AND SURVEYORS.

WANTED, by the Advertiser, a Situation in a London Office; is a good draughtsman, with a knowledge of perspective, and conversant with the requirements of an architect's office. Salary moderate.—Address, B. B. H. Office of "The Builder," 1, York-street, Covent-garden.

A YOUNG MAN from the country, about 20, wishes to engage himself as an IMPROVER to a PLASTERER. He is just out of his apprenticeship, and can have a good character.—For particulars apply to "G. Y." No. 27, Russell-street, Hastings, Sussex.

TO BUILDERS, PAINTERS, &c.

A YOUNG MAN, accustomed entirely to London work, is open to an ENGAGEMENT (either in town or country) as GRAINER. Can make himself generally useful in the other branches of House Painting, and Write if required.—Address, prepaid, "R. W." Post-office, Greek-street, Soho.

TO ARCHITECTS.

AN ARCHITECT'S ASSISTANT, accustomed to prepare finished and working drawings, and a good colourist, is desirous of an ENGAGEMENT. References, &c. given.—Address "S." 23, Chenies-street, Bedford-square.

TO NOBLEMEN AND GENTLEMEN.

A RESPECTABLE MAN, competent to design and superintend the erection of villas, farm-houses and buildings, cottages, &c. and to measure and value artificers' work, is in want of a SITUATION. The Advertiser can produce most satisfactory testimonials from his previous employers.—Address, pre-paid, to H. J. at Mr. Wheeler's, Bookseller, 220, Strand.

TO POTTERS AND RED AND STONEWARE PIPE MANUFACTURERS.

A THOROUGH practical, experienced FOREMAN, having filled a similar situation for many years, wishes for a RE-ENGAGEMENT. The Advertiser is well acquainted with the working of the trade, and has no objection to occupying that department when required. Satisfactory testimonials and reference to last employer.—Address, W. H. 2, Salmon's Cottage, Salmon's-lane, Limehouse.

TO ARCHITECTS, LAND SURVEYORS, &c.

A YOUNG MAN, aged 24, who has been for three years with his present employer, and can be well recommended, wishes for an ENGAGEMENT. He can draw, trace and colour plans, and attend to the usual routine of an Office. Salary, One Guinea per week.—Address, F. C. 5, London-street, Paddington.

TO ARCHITECTS, BUILDERS, &c.

A YOUNG MAN, aged 23, wishes for an ENGAGEMENT in an ARCHITECT or BUILDER'S OFFICE. He is a quick and neat draughtsman, and thoroughly understands the practical part of the profession, and capable of making fair drawings.—Address, D. G. 3, High Holborn.

APPRENTICE.—Wanted to Apprentice an Intelligent Youth to a MECHANICAL BUSINESS.—Address, by letter, post-paid, ALPHA, 5, Selwood Terrace, Brompton.

TO LAMP, CHANDELIER, AND GAS-FITTING MANUFACTURERS.

AN experienced Assistant in the above trades wishes for a RE-ENGAGEMENT.—Address, Z. 16, Palace-road, Lambeth.

TO BUILDERS.

A YOUNG MAN, aged 21, who has been six years in the employ of a London Builder, and has been used to the general routine of an office, wishes for a SITUATION.—Apply, R. R. No. 12, Albert-road, Sydenham.

TO CARPENTERS AND BUILDERS.

THE Advertiser, who has been used to a jobbing business, wishes to go as an IMPROVER at the BENCH to a good firm. Age 27.—Address, H. B. Office of "The Builder," 1, York-street, Covent-garden.

TO ARCHITECTS.

A GENTLEMAN, having completed his education in Italy, desires the MANAGEMENT of an ARCHITECT'S OFFICE.—Direct, Z. Y. X. Porter's Lodge, Barnard's-inn, Holborn.

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JOSEPH SOUL, Secretary.

Offices, 32, Ludgate-hill, June 20, 1853.

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R. A. MARCH, Secretary.

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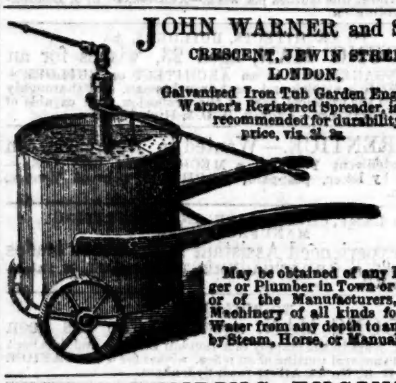

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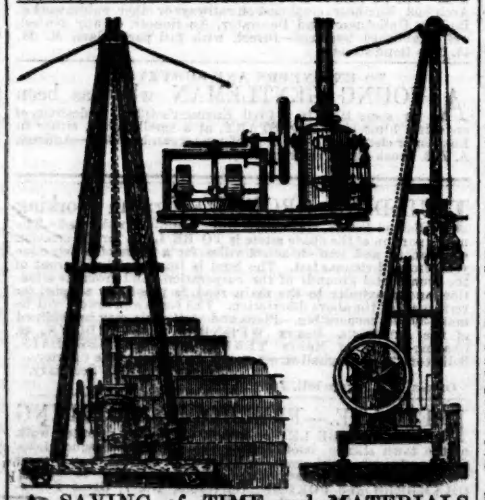

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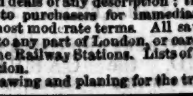
By Her Majesty's  Royal Letters Patent.
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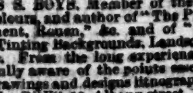
MUIR'S PATENT  PLANING MACHINE.
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6	by	4	13s. 7d.	12	by	10	18s.	14	by	11	18s.	16½	by	12½	19s.	18	by	12	19s.	18	by	16	22s.
6½	"	4½		12½	"	10½		14½	"	11½		17	"	12½		18½	"	12½		18½	"	16½	
7	"	5		12½	"	10½		15	"	11½		17½	"	12½		19	"	12½		19	"	16½	
7½	"	5½		13	"	10½		15½	"	11½		18	"	12½		19½	"	12½		19½	"	16½	
8	"	6		14	"	10		16	"	11		18½	"	12½		20	"	13		20	"	14	
8½	"	6½		14½	"	10½		16½	"	11½		19	"	13		20½	"	13½		20½	"	14½	
9	"	7		15	"	10		17	"	11		19½	"	13		21	"	13		21	"	14	
9½	"	7½		15½	"	10½		17½	"	11½		20	"	13		21½	"	13½		21½	"	14½	
10	"	8		16	"	10		18	"	12		20½	"	13½		22	"	13		22	"	14	
10½	"	8½	16s. 3d.	16½	"	10½		18½	"	12½		21	"	13½		22½	"	13½		22½	"	14½	
11	"	9		17	"	10		19	"	12½		21½	"	13½		23	"	13½		23	"	14	
11½	"	9½		17½	"	10½		19½	"	12½		22	"	13½		23½	"	13½		23½	"	14½	
12	"	9		18	"	11		20	"	12½		22½	"	13½		24	"	13½		24	"	14	
12½	"	9½		18½	"	11½		20½	"	12½		23	"	13½									

In Cases, 200 feet ..... £1 16 6 } In sizes 40 by 30.
" 300 feet ..... 2 14 0 } to 42 by 31.

IMPROVED PATENT ROUGH PLATE, PLAIN, FLUTED, AND IN QUARRY PATTERNS.

BRITISH PLATE, PATENT PLATE, SHEET, CROWN, AND COLOURED WINDOW GLASS. PURE WHITE SHADES FOR ORNAMENTS.

Pumps, Water-closets, and Plumbers' Brass Work. Genuine White Lead, Paint, Colours, Varnishes, Brushes, &c.
Tariffs of the above on application to

T. MILLINGTON, 87, Bishopsgate-street Without, London.

TO ARCHITECTS, BUILDERS, CONTRACTORS, &c.

HARTLEY'S PATENT ROUGH PLATE GLASS,

1-8th thick, or 2 lbs. to the foot; 3-16ths, or 3 lbs.; and 1-4th, or 4 lbs. to the foot, for

RIDGE AND FURROW ROOFS, GREENHOUSES, RAILWAY STATIONS, ENGINE SHEDS, MILLS, MARKET HALLS, AND PUBLIC BUILDINGS GENERALLY.

It being universally admitted that Glass in Roofs of a permanent character should not be less than one-eighth of an inch thick, weighing two pounds to the foot, Messrs. JAMES HARTLEY and CO. have directed their attention to the manufacture of a description of

ROUGH PLATE GLASS, THAT COMBINES SIZE AND STRENGTH WITH ECONOMY OF COST.

The PATENT ROUGH PLATE is manufactured in sizes expressly for Ridge and Furrow Roofs, giving a span of from 6 to 12 feet, at a price not exceeding weight for weight that of common Crown Glass. Not being transparent, blinds are unnecessary, and when used in Greenhouses no scorching occurs; its NON-TRANSPARENCY and strength render it eminently suitable for the Glazing of Conservatories and Roofs of all kinds; also Factories, Workshops, &c. for which purposes it is supplied in squares of all sizes, from 6 by 4 inches and upwards.

For further information apply to Messrs. JAMES HARTLEY and CO. Wear Glass Works, Sunderland.

N.B.—The Patent Rough Plate is supplied at a much lower cost than the common Rough Plate.—May 1, 1852.

GLASS.—HARTLEY AND CO.'S GLASS TARIFF NEWSPAPER

Will be forwarded Gratis, on application, "post-paid," to

Messrs. JAMES HARTLEY and CO. Wear Glass-works, Sunderland; or Purfleet Wharf, Earl-street, Blackfriars, London.

TO ARCHITECTS AND BUILDERS.

FOR SALE, PLATE-GLASS for SHOP-WINDOWS.—The Thames Plate-glass Company have now ready several large plates of suitable size and strength, to form an entire shop window with one; late only. Sizes:—201 inches by 114 inches, 200 inches by 113 inches, 132 inches by 109 inches, 185 inches by 109 inches, 173 inches by 100 inches, 143 inches by 100 inches, 118 inches by 100 inches. They have also made arrangements for supplying promptly well annealed light colour Rough Plate Glass, of various thicknesses and of any reasonable dimensions.—Apply to the Secretary, Savoy Wharf, Strand.

OSLER'S TABLE-GLASS, Chandeliers, Lustres, &c. 44, Oxford-street, London, conducted in connexion with their manufactory, Broad-street, Birmingham; established 1807. Richly cut and engraved decanters in great variety, wine-glasses, water-jugs, goblets, and all kinds of table-glass, at exceedingly moderate prices. Crystal glass drawing-room chandeliers, for candles and gas. A large stock of foreign ornamental glass always on view.

E. and W. H. JACKSON beg to call the attention of Builders and the Trade to the LOW PRICES of their PATENT PLATE GLASS, BRITISH PLATE, silvered and for glazing, of unrivalled quality and finish; ROUGH PLATE, CROWN, SHEET, COLOURED, and ORNAMENTAL GLASS, in every variety, of the best manufacture, at the lowest terms. Designs and estimates furnished for ornamental windows, either for house or church decoration.—All applications for estimates and lists of prices to be made at their warehouse, 215, OXFORD-STREET.

CHEAP ORNAMENTAL GLASS.—I beg to inform my friends and the public, that I have now completed a new ENGINE, and, owing to the facility with which I can execute orders, I am enabled to reduce my former prices considerably. The prices are now from ONE SHILLING PER FOOT SUP. and Borders from SIXPENCE PER FOOT RUN. A large quantity of the cheapest patterns always in stock. Embossing and painted work on the most moderate terms. CHARLES LONG, No. 1, King-street, Baker-street, Portman-square.—Cash only.

SOHO CROWN, SHEET, ORNAMENTAL, PATENT PLATE, AND PLATE-GLASS WAREHOUSE, 26, SOHO-SQUARE.

ALFRED GOSLETT begs to inform Builders, &c. that he is prepared to Tender for the supply of EVERY DESCRIPTION of Glass, now manufactured at WHOLESALE PRICES.

PATENT and BRITISH PLATE GLASS. JAMES HETLEY and CO. beg to inform Architects, Builders, and the Trade generally, that their new Tariff of Prices for the above will be sent on application; they will also, on receipt of particulars, furnish estimates for any description of Glass now manufactured.—Patent Plate, Sheet, Crown, and Ornamental Window Glass Warehouse, 35, Soho-square, London.

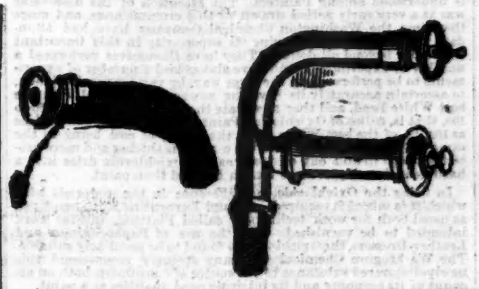
TARPAULINS for COVERING ROOFS during Repairs, SCAFFOLD CORD and every description of ROPE used by Builders upon the lowest terms. Marquees and temporary Awnings on sale or hire. Orders per post receive the most prompt attention.—WILLIAM PIGGOTT, 115, Fore-street, City, Manufacturer, by appointment, to her Majesty's Honourable Board of Ordnance.

THE PERMANENT WAY COMPANY beg to call the attention of Boards of Directors, Engineers, and others interested in Railways, to the important advantages to be derived from the use of their Patented Inventions, not only in the saving effected in first cost and maintenance, but also in the durability of the roads so constructed, and the ADDITIONAL SAFETY ensured by their adoption beyond any other known systems.

The Permanent Way Company's various Patents are now adopted to an extent of nearly 300 miles on railways in this country and abroad: the system of Permanent Way, patented by Mr. W. H. Barlow, is being adopted on one of the most important trunk lines in France, to an extent of 300 miles, resulting from a close investigation of its merits recently made by some eminent French Engineers.

The Company confine itself to the granting of Licences for the use of the different Patents, which is done on very reasonable terms.

Certificates of approval from the most eminent Engineers may be inspected at the Office of the Company, 32, Great George-street, Westminster, where every information as to the cost of constructing the different systems may be obtained, on application to CHARLES MAY, Esq. C.E.; or to WILLIAM HOWDEN Secretary.



WHISHAW'S REGISTERED

IMPROVED TELEKOUPHONON

FOR SPEAKING-PIPES.

By means of this invention speaking-pipes may be rendered more generally available for Public Buildings, Club Houses, Noblemen's Mansions, City Warehouses, Offices, &c. &c. Consists of a whistle-mouthpiece of ivory, wood, or metal, with an indicator attached, by means of which, in case of two or more speaking-tubes being carried into one room, the mouthpiece from which a whistle proceeds is readily ascertained.

The newly-registered invention also embraces a plan (as shown in the right-hand figure annexed) to supersede the necessity of blowing into a speaking-pipe when the whistle at the further end is required to be sounded.

Manufactured solely by
KEPP and COMPANY, 40, 41, and 48, Chandos-street, Charing-cross;
And to be had retail of all respectable Ironmongers.

By Her Majesty's Royal Letters Patent

BRICKS MANUFACTURED BY

BEART'S PATENT BRICK COMPANY,

CAN NOW BE PURCHASED AT THEIR

LONDON DEPOT,

GREAT NORTHERN RAILWAY GOODS STATION, KING'S-CROSS,

EITHER DELIVERED INTO CARTS OR BOATS, AT

THIRTY SHILLINGS PER THOUSAND.

BEART'S PATENT BRICK COMPANY invite the attention of ARCHITECTS, BUILDERS, and others interested in the building trade, to an inspection of these very superior Bricks. Among the advantages they possess over the ordinary make, the following may be enumerated:—

The form of the Brick and the quality of clay used ensure great strength and durability.

The perforations enable a uniform drying in the clay, ensure an efficient and thorough burning, and cause them to bed with extraordinary firmness in either mortar or cement.

Being lighter, the cost of carriage is lessened.

Their slightly absorbent property especially recommends them where DRY walls are required, and being of a

BRILLIANT WHITE COLOUR

they may be used as well for EXTERNAL FACINGS as inside work.

Samples may be obtained and Specimens of work seen by applying as above.

N.B. Delivered without additional charge at any Station on the Great Northern Railway between London and Hitchin, in quantities of not less than 3,000.

WORKS: ARLSEY, BEDFORDSHIRE.

London, 1st July, 1852.

QUANTITIES, SPECIFICATIONS, SCHEDULES of PRICES, WORKING DRAWINGS, &c. copied, lithographed, or printed.
PLANS, ELEVATIONS, DRAWINGS of MACHINERY, &c. lithographed or engraved.
BUILDERS' and CONTRACTORS' ACCOUNT-BOOKS; DRAWING PAPERS; ditto, mounted and continuous; TRACING PAPER and CLOTH; ditto in lengths.
GENERAL STATIONERY, for the use of BUILDERS, ARCHITECTS, SURVEYORS, and ENGINEERS, at the lowest current rates.
WATERLOW and SONS, 65 to 68, London-wall; and 49, Parliament-street, London.
Contracts for the supply of large establishments.

SURVEYING, ARCHITECTURAL, and ENGINEERING ESTABLISHMENT, for preparing Gentlemen for Surveyors, Architects, Engineers, Levellers, Draughtsmen, Measurers, Valuers, &c. and for giving EVENING INSTRUCTION, in Architecture, Civil Engineering and Mechanical Drawing, Colouring, Perspective, Mathematics, Mechanics, Writing Specifications, Taking out Quantities, Preparing Estimates, &c. &c. Terms, one guinea per quarter.—For prospectuses, &c. apply at the Offices, 24, Guildford-street, Russell-square.

HEAL and SON'S ILLUSTRATED CATALOGUE of BEDSTEADS, sent free by post. It contains designs and prices of upwards of ONE HUNDRED different bedsteads; also of every description of bedding, blankets, and quilts. And their new ware-rooms contain an extensive assortment of bed-room furniture, furniture chintzes, damasks, and dimities, so as to render their establishment complete for the general furnishing of bed-rooms.

HEAL and SON, Bedstead and Bedding Manufacturers, 196, Tottenham-court-road.

TO ARCHITECTS, SURVEYORS, ENGINEERS, AND BUILDERS.

PIGGOTT and CO. 523, New Oxford-street, call the attention of the above to their large assortment of every description of surveying and drawing instruments. Drawing Pens of the best quality at the following prices:—

Steel Drawing Pens, with ivory handles	4s. 6d.	
do. do.	brass-jointed do.	6s. 6d.
do. do.	German silver do.	9s. 6d.

And every other instrument of the best workmanship equally low.

TODD'S PATENT METALLIC PROTOXIDE PAINT.

The PATENT METALLIC PROTOXIDE PAINT now offered, has been found, after the most severe trials, to be peculiarly efficacious in preserving Iron from Oxidation, Wood from Decay, and Masonry and Brickwork from dampness.

Applied to Iron it unites with it most intimately, forming a complete coating; so that thus protected, it will be found equal to the best galvanized Iron. Hence its great value to all Engineers and Iron Founders as an application to Iron Vessels, Iron Roofs, Steam and Water Pipes, &c. &c. It adheres firmly to Iron even at a red heat.

Many attempts have been made to discover a substitute for White Lead, that should possess all its virtues, without partaking of its offensive character. This Paint is not affected by sulphuretted or carburetted hydrogen gas, bilge water, or indeed foul air of any kind: hence it is well adapted for the interior of Ships, Warehouses, Offices, Stabling, &c.; and from its total freedom from deleterious properties, it will be found of great value for painting the interior of Hospitals, Asylums, Unions, Gaols, and other Buildings which may require to be painted during occupation.

This Paint resists the action of the sun's rays, and also that of the sea air: it is therefore well suited for the Colonies and all tropical climates.

For Stuccoed Buildings it will be found to be effectual in preventing the discolourations formed by vegetation, and keeping out all dampness.

The Protoxide Paint, as at present produced, is a Pale Stone Colour; but it may be tinted with any other colour to suit the taste and purpose for which it may be required.

For terms, application to be made at the Offices of the Company,

12, BISHOPSGATE-STREET WITHIN, LONDON; or to Messrs. PITCHFORD, ISLAND LEAD WORKS, LIMEHOUSE.

TESTIMONIALS.

"Brighton, Croydon, and Dover Railways,
Locomotive Department, New Cross, Sept. 25, 1845.

"Sir,—In reply to yours respecting the 'Patent Protoxide Paint,' have much pleasure in stating that what has been used in this tablishment has been highly approved of, and I consider it the est description of paint yet used, particularly for iron-work, for which purpose I can strongly recommend it.

"I am, Sir, your obedient servant,
"BENJ. CUBITT."

"Regent's Canal Iron Works, Eagle-wharf-road, Dec. 5, 1845.

"Sir,—As it is always my wish to render justice to every one, as far as it is in my power to do, I have great pleasure in informing you, that I have very severely tested your 'Patent Protoxide Paint;' that the results are most satisfactory; and that I consider it a very valuable article for an Iron-founder. I have ordered it to be used with us wherever circumstances will allow us to do so. I will, moreover, use it for all my own work, and wish I had known it somewhat earlier.

"I am, Sir, yours respectfully,
"HENRY GRISSELL,
"Pro H. and M. D. Grissell.

"P.S.—It must be good for Boilers."

"St. Day, near Redruth, Cornwall, 7th April, 1846.

"Sir,—We have used your 'Patent Metallic Protoxide Paint extensively about various parts of machinery with great advantage. We find it prevents oxidation, and stands any ordinary heat without being the least blistered or injured. About two years since we painted with it the interior and exterior of some steam-boilers and steam-tubes, and they still remain in the most perfect state, and we consider it of great value for all iron-work.

"HOCKIN and LOAM, Engineers."

TO HOUSEHOLDERS.

BUILDING SOCIETIES SUPERSEDED by the new system of LOANS, extending over a period of from three to twelve years, repayable by quarterly instalments, of the Householders' and General Life Assurance Company.
No. 16 and 16, Adam-street, Adelphi. R. HODSON, Secretary.

FRONTS of HOUSES.—BELL'S PATENT COLOUR is now established beyond question for permanency, beauty, and economy, destroying all greenish vegetation. May be applied by any ordinary workman, and only one-eighth the cost of oil paint. In casks of 1, 2, and 3 cwt. at 8s. 12s. and 21s. each.

DAMP WALLS.—PATENT ELASTIC PAINT, as used at the Tunnel, Zoological Gardens, Regent's-park, and various other public and private establishments. Sold in quantities to cover 150 square feet for 10s.; and guaranteed.

BLACK MINERAL PAINT, very permanent, half the usual price; only 8s. per gallon.

PATENT INDIA-RUBBER PUTTY, never shrinks, therefore no possibility of leakage, 28s. per cwt. or 4d. per stone.

G. BELL and CO. Steam Mills, 2, Wellington-street, Goswell-street, London.

PATENT WHITE OXIDE OF ZINC FOR PAINT, &c.

HEALTHFUL HOMES, with avoidance of the inconvenience and expense of removal to families during painting. Disease and premature death amongst painters prevented.

LANGSTON SCOTT and WHITE,
Sole Manufacturers in the United Kingdom,
Now supply their innocuous substitute for White Lead, either in Powder or Paste, of genuine purity (Wholesale, under Brand, from the Works, Grand Surrey Dock, Rotherhithe).

In 14 lb. Kegs, and upwards, from the Depôts of their respective Agents:—

LIVERPOOL—Mr. T. BROUGH, South John-street.
HULL—R. SUMNER and CO., Lord-street.
LEWES.—RIDLEY and GRINWADE.
IRELAND.—P. REILLY and SONS, 15, Cope-street, Dublin.

ZINC PAINT is much below the price of White Lead, possesses equal body, covers 20 per cent. more of surface, and being perfectly free from all Acids, can be tinted with the most delicate colours, which will remain permanent for years.

Price Current and Prospectus, containing Testimonials from the most eminent men, of its superior properties for Interior, Exterior, and Marine purposes, forwarded in answer to Letters addressed to the above Agents, or the Patentees, 10, Lombard-street, London.

THE VIEILLE MONTAGNE ZINC MINING COMPANY beg to inform the public that they have appointed Messrs. T. and S. KNIGHT, of Great Suffolk-street, Southwark, as their painters, who will be ready to execute any description of painting and decorating with the Pure Patent White Zinc Paint.

THE VIEILLE MONTAGNE ZINC MINING COMPANY'S PURE PATENT WHITE ZINC PAINT is unequalled for permanency of colour, hardness and brilliancy of surface; it is unaffected by sulphurous or any other vapours or emanations. Being completely innocuous and free from the pernicious effects of whitelead, it may be employed in all apartments whilst in use without any inconvenience to the inmates.

The greatest caution is recommended to avoid any spurious compounds that might be sold at cheap rates as Pure Oxide of Zinc. If any adulteration has taken place in the oxide, either in consequence of impurity in the material primarily made use of to produce it, an imperfect mode of production, or by mixing with the oxide certain substances calculated to give it increased weight, it then produces a very inferior instead of a very superior paint, and the economy realised by the purchasers of such oxides, becomes a very expensive result to the owner of the premises painted with them.

The VIEILLE MONTAGNE'S ZINC OXIDES, dry or ground in oil, are sold with the VM mark—In Hull, by Messrs. BLUNDELL, SPENCE, and CO.; when ground and dry, by Messrs. F. R. WORLEY and CO.; and by the Company's Grinding Agents, in London, Messrs. CHARLES DEVAUX and CO., Wholesale agents, 68, King William-street, City; Mr. CHARLES JACK, wholesale and retail agent, 8, Tottenham-court, New-road, and 90, Upper Thames-street, City. In Manchester and Liverpool, by Messrs. HAWFORD and CO. of 40, Norfolk-street, Liverpool. In Leeds, by Messrs. R. ANDERSON and CO. Timber-bush. Dry OXIDES and PAINTS, in kegs of 14, 28, and 56 lbs. and upwards, to be had of the Company's Agents, in Birmingham, Newcastle, Glasgow, Bristol, Plymouth, Portsmouth, Norwich, Ipswich, Wales and the Isles of Jersey, Guernsey, Man, and Wight; also, in Dublin, Cork, and Belfast.

The Company also employ an acknowledged painter in London, who will undertake any description of painting with Zinc Paint by Contract.

For further particulars, apply to the Company's General Agent in London, Mr. SCHMOLL, 12, Manchester-buildings, Westminster.

HUBBUCK'S PATENT WHITE ZINC PAINT. The PERMANENT WHITE of the Ancients, previously confined by its cost to the use of the artist, is now, by Hubbuck's Patent, reduced to a less price than White Lead.

The principal characteristics of HUBBUCK'S ZINC PAINT are—Economy, Health, Beauty, and Durability.

Builders and Contractors find Hubbuck's Paint the only one adapted to all their purposes; possessing the great desideratum of economy, combined with its high excellence as a paint, it ranks alone. Contractors effect a saving of 25 per cent. by using HUBBUCK'S ZINC PAINT.

HUBBUCK and SON feel it necessary a caution should be circulated against imitations of their Paint. These manufactures, containing frequently pernicious ingredients, are baneful to health and worthless in use, whilst the inexperience of these imitators in the production of pigments is evidenced, not alone by the coarse grainy appearance, but also by the deficiency of that body in their produce, which is known to the painter to be all-essential. That an imposition be not practised, therefore, notice that the cask is marked with the name of the original manufacturer, thus—

HUBBUCK——LONDON——PATENT.

If not so marked, the reason may be inferred.

Every information in the circular to be had of THOMAS HUBBUCK and SON, Paint and Varnish Manufacturers, Upper East Smithfield (opposite the London Docks), London.]

THE WASHINGTON CHEMICAL COMPANY, NEWCASTLE-ON-TYNE, Manufacturers of

PATTINSON'S OXICHLORIDE of LEAD.

The Washington Chemical Company having, during the last year, established a Manufactory of Pattinson's Oxichloride of Lead on a large scale, and being able to supply it with regularity, and to execute orders without delay, now proceed to bring this new and valuable preparation of Lead before their friends and the public, quite sure that it will not in the present age, be condemned because it is new, and that if judged by its merits, it must make its way, and finally take its place as one of the important manufactures of this country.

Pattinson's Oxichloride of Lead is a chemical combination of one equivalent of Chloride of Lead, and one equivalent of Oxide of Lead; it being well known that common White Lead is a chemical combination of one equivalent of Oxide of Lead, and one equivalent (or thereabouts) of Carbonic Acid, constituting what is called in chemical language, Carbonate of Lead. Now there is no reason to conclude that Carbonate of Lead is the only compound of Lead valuable as a paint, and still less that it should be the best compound of Lead for that purpose. In point of fact it is not so, for the newly-discovered Oxichloride in most, if not in all respects, is far superior; its colour is brilliantly white, and in a number of cases it has been tried against the best White Lead that could be obtained, and after a period of upwards of two years, it has been found to retain its white colour considerably better than the lead against which it was tried.

But the chief and by far the most important advantage it possesses is, its remarkable and very decided superiority of Body; by which terms the power of covering surface well and extensively is understood among Painters. The attention of the discoverer was at a very early period drawn to this circumstance, and since that time the Washington Chemical Company have had abundant opportunities of placing its superiority in this important particular beyond all doubt. They have themselves performed a number of experiments, and have also caused a number of experiments to be performed, in the large way, by various practical men, to ascertain accurately its covering power as compared with the best White Lead, and they now state the proportions to be as 60 to 100, that is, 60 lbs. of Oxichloride Paint will cover as much surface as 100 lbs. of the best White Lead, the saving of cost being in the same proportion; besides this, the coating is thicker and more protective, both in and out of doors, as the Oxichloride dries into a hard, tenacious layer, more like an Enamel than paint.

In using the Oxichloride, no difference in the materials with which it is mixed is required. Oil and Turpentine being employed as usual both for work technically called Flatting, and for work intended to be varnished. For the use of Paper-Stainers and Leather-Dressers, the Oxichloride is found to be peculiarly suitable. The Washington Chemical Company strongly recommend this newly-discovered substance to the notice of consumers, both on account of its economy and its intrinsic good qualities as a paint.

AGENTS.

LONDON ..... Messrs. Blundell, Spence, and Co. 9, Upper Thames-street. Mr. Richd. Cooke, 7, Size-lane.
LIVERPOOL ..... Messrs. Johnson and McGowan.
MANCHESTER ..... Mr. James Douglas.
LEEDS ..... Messrs. T. and E. G. Jepson.
SUNDERLAND ..... Mr. John Young.
DEVONSHIRE AND CORNWALL ..... Mr. Richd. Penrose, Tavistock and Plymouth.
EDINBURGH AND EAST COAST OF SCOTLAND ..... Mr. Wm. Bailey, jun. Greenside-place, Edinburgh.
GLASGOW AND WEST COAST OF SCOTLAND ..... Mr. John Slimshaw, Glasgow.
DUBLIN AND SOUTH OF IRELAND ..... Mr. P. Linskey, 91, Middle Abbey-street, Dublin.
BELFAST ..... Messrs. William Stevenson, jun. and Co.

ATKINSON'S CEMENT, so long known and esteemed in London, for plastering purposes, is a quick-setting Cement, that requires no colouring.—Sold exclusively by JOHN BAZLEY WHITE and BROTHERS, Millbank street, Westminster; and Seel-street, Liverpool.

PARIAN CEMENT for internal use, to be PAINTED IN A FEW HOURS AND PAPERED WITHIN A COUPLE OF DAYS.—CHARLES FRANCIS and SONS, Patentees, and Manufacturers of Roman and Portland Cement, &c. &c. Nine Elms, London.

KEENE'S and PARIAN CEMENTS and FRENCH PLASTER for internal uses.—These well-known hard stuccoes dry quickly, and can be painted upon within a few days. Made and sold by JOHN BAZLEY WHITE and BROTHERS, Millbank-street, Westminster.

ROMAN and OTHER CEMENTS.
Manufactured by J. M. BLASHFIELD, successor to the Patentees PARKER and WYATT, who, in 1796, first introduced PARKER'S ROMAN CEMENT; also Tarras and Portland Cements, English and French Plaster, Terra Cotta Chimney Pots, Trusses, &c.
Manufactory, Mill Wall, Poplar; Depôts Commercial-road, Lambeth; and Paddington-basin.

PORTLAND CEMENT.—JAMES WESTON having enlarged that portion of his CEMENT WORKS on Mill-wall, Poplar, for Manufacturing the above CEMENT, begs to inform the Trade in general that they can be supplied with any quantity they may require, either at his Works, St. Andrew's Wharf, Earl-street, Blackfriars, or Middle Wharf, Scotland-yard, Westminster. Manufacturer of Roman, Lias, and Mastic Cements, English and French Plaster, &c.

ARTIFICIAL HYDRAULIC or PORTLAND CEMENT combines the valuable qualities of the natural cements with the additional advantage that it greatly excels them in its cementitious properties; that it is not affected by frost, and does not vegetate in damp situations. Account of COMPARATIVE EXPERIMENTS on the strength of this and other cements (read at the Institute of Civil Engineers), to be obtained from the makers, JOHN BAZLEY WHITE and BROTHERS, Millbank-street, Westminster, who prepare one quality only of Portland Cement.

PORTLAND CEMENT.—ASPDIN'S PATENT.
Messrs. ASPDIN, ORD, and CO. have much pleasure in informing consumers of this valuable cement, that they have, by means of a recent discovery (patented by Mr. Aspdin) much improved the quality of this cement without any increase in price.

Engineers and architects are recommended to specify "Aspdin's Patent," as there are numerous imitations sold as Portland Cement, resembling it only in colour.

ASPDIN, ORD, and CO. beg to call attention to their SECOND QUALITY, which is equal, if not superior, to most of the cements sold as Portland, and is considerably cheaper.

A report of experiments made to prove the extraordinary strength of their Patent Portland Cement, may be had at their office, New-wharf, Westminster, London; at their works, Gateshead-on-Tyne; or from their agent, MR. HENRY ROBINSON, 31, King-street, Liverpool.

PORTLAND CEMENT WORKS, NORTHFLEET, KENT.—Messrs. ROBINS and CO. solicit the attention of their friends and the public to their superior Cement, confident that the great improvement in the manufacture of the same in 1852, together with the most perfect uniformity in colour, will ensure to them a continuance of that patronage with which they have so long been favoured.—Orders received at the Works, and at Great Scotland-yard, Whitehall.

PORTLAND CEMENT.—6, South Wharf, Paddington. CHARLES RICHARDSON has the greatest confidence in introducing to the trade the above superior CEMENT, being of uniform colour and quality (a desideratum never before attained in Portland Cements). It possesses extraordinary cementitious qualities, resists the action of frost and heat, and is more durable than any other Cement; does not vegetate, burn, grain, or crack; combined with which its eminent hydraulic properties stamp it at once as the first cement of the day for work where all the above qualities are requisite. It is manufactured on the only principle Portland Cement can be, and contrary to the statements put forth by those who have hitherto had the monopoly. Manufactured by R. GREAVES, Esq. at his Works, near the River Avon, and sent to all parts of the kingdom per boat or rail, at a reduced price to the trade.

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